Technology Plan 2010-2015
Update
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Executive Summary

Technology is an integral part of any educational program. However, it should be integrated in all respects and never approached as an "add-on". Throughout the Division teachers have found that when incorporated properly, technology enhances instruction, improves student engagement, and stimulates their achievement. Additionally, operational technology tools have improved efficiency with respect to service, support, and data management. Due to constant reflection and reevaluation, technology planning in MCPS is flexible, yet focused. MCPS works to identify instructional and operational goals, and then seek solutions as evidenced in this technology plan.

The Virginia Department of Education has identified specific items to be included in Division technology plans. The format of the MCPS Technology Plan follows the Virginia Department of Education Technology Plan and provides details about the current status of technology within the Division. Following are details about sections of the MCPS technology plan:

Process – Provides a connection of the work performed by the planning committees in identifying the technology needs to the Division's mission and vision and outlines the future evaluation procedure. Strategies are referenced parenthetically throughout the Plan.

Action - Identifies the goals, objectives, strategies, and evaluation criteria of the plan. Each strategy is detailed in the narrative sections of the Plan and page numbers are referenced parenthetically in the Action section.

Appendix I - Contains the timetable, budget needs, and sources for the future implementation of the plan.

Appendix II – Contains the Division's Acceptable Use Policy for students and staff (Policy 6-3.13).

Appendix III - Provides a summary of the Division's Internet Safety Program, which is recognized state-wide and is also referenced by school Divisions in other states.

Appendix IV – Provides details of the current status of technology in the Division as well as results of the Division's needs assessment, which was compiled through the work of the technology planning committees.

I. Connections to MCPS Mission and Vision

The Mission of Montgomery County Public Schools (MCPS) is to prepare students to be college and career ready so they become productive citizens. As evidenced in this technology plan, the MCPS Technology Department strives to provide services as well as tools that support the mission and vision of the District. The vision for MCPS is articulated in four separate statements. Those statements are listed below with examples of connections to the MCPS Technology Plan. MCPS values a high performing learning culture, one that places "Students First" by:

- Cultivating positive relationships based on mutual trust, respect, and open communication among all stakeholders.

  - The MCPS Technology plan details specifics related to sustaining open communications among stakeholders through the following:

    - Division, department, and school web pages that provide current, pertinent information,
    - Parent/Student Portals which allows both parents and students access to student information such as grades and attendance,
    - Email system which serves as a tool for internal communication for staff as well as a means for staff to communicate with parents, students, and the community and,
    - Emergency Phone Notification System, School Messenger, which enables notifications to be rapidly issued either through the phone or a computer to any number of targeted stakeholder groups.

- Holding high expectations for achievement and accountability through effective practices which actively engage students.

  - Technology use in MCPS is interwoven among curriculum areas. It is not an additional element of instruction. When used effectively, technology is a key factor in instilling enthusiasm for learning and teaching. The MCPS Technology Plan supports enhancement of the instructional environment through technology

integration by:

- seeking to provide a 21st Century Learning Environment for MCPS students and instructional staff,
- achieving a 1:1000 ratio of Instructional Technology Resource Teachers to students as required by the Virginia Standards of Quality,
- keeping abreast of emerging technologies and working to obtain those that are appropriate for MCPS learning environments,
- offering technology integration courses and resources to MCPS teachers and,
- working to increase the number of appropriate interactive technology tools.

- Sustaining a nurturing environment that ensures the physical safety and emotional well-being of all individuals within the learning community.

  - MCPS has always made a concerted effort to protect both the physical and emotional safety of students and staff when present in Division boundaries. However, in general, nationwide, violent acts have both increased in number and changed in nature. As a result, the approach to school safety involves technology to a much greater degree. The MCPS technology plan supports Division efforts to protect students in the following ways:

    - continues to maintain a comprehensive Internet Safety program that is an integrated part of the MCPS curriculum,
    - participation in a Division Security Project Initiative that places school security technologies (video cameras, visitor badges, buzz-in entrances, classroom telephones, etc.) at all Division schools, as well as provides necessary training and support,
    - maintaining a crisis plan for technology and,
    - maintaining an Emergency Notification System.

- Developing a culture that encourages lifelong learning for students and staff.

  The Division strives to develop lifelong learners among the Pk-12 student population, as well as among staff and the Montgomery County community. The MCPS Technology Plan supports these efforts in the following ways:

  - exploring the creation of Professional Learning Communities for Teachers,
  - providing staff development sessions during summer months and after school hours,
  - encouraging and supporting the development of virtual learning opportunities students, teachers and staff
  - partnering with New River Community College to offer 3 hour credit courses to MCPS teachers and,
  - offer technology sessions for community members at school sites.

II. Planning Committee Work and Benchmarks (4:1:5)

A well-written, meaningful technology plan is one that has been written with stakeholder involvement throughout the process. In MCPS each school has a technology committee which includes staff members, as well as parents and often students. Each committee is responsible for securing and integrating instructional technology and creating a site technology plan. The ITRT assigned to the site provides guidance as necessary. Plans are submitted to the Technology Department where they serve as a resource in the creation of the Division Technology Plan. The Director of Technology also meets with division leadership to obtain input during the process. Curriculum supervisors meet to discuss instructional needs and ways that technology can help meet those needs for inclusion in the Plan. Finally, the Plan reflects technology-related initiatives that involve a project manager and committee input. MCPS Technology Plan meeting dates follow.

Group	**Meeting Date(s)**
Auburn Elementary	11/17/08; 6/8/09; 9/28/09
Auburn High	5/28/09; 6/3/09
Auburn Middle	12/8/08; 2/25/09; 5/11/09; 10/12/09
Belview Elementary	2/20/10
Blacksburg High	10/1/08; 10/15/08; 3/11/09; 3/11/09
Blacksburg Middle	5/22/09
Christiansburg Elementary	5/19/09
Christiansburg High	5/22/09
Christiansburg Middle	4/16/09
Christiansburg Primary	4/2/09
Eastern Montgomery High	1/28/109; 5/13/09; 5/29/09;
Falling Branch Elementary	5/13/09; 6/18/09
Gilbert Linkous Elementary	11/26/08; 5/13/09
Harding Avenue Elementary	12/3/08; 5/27/09
Kipps Elementary	3/10/09
Margaret Beeks Elementary	6/5/09
Price's Fork Elementary	5/12/10
Shawsville Middle School	1/9/09; 1/22/09; 4/21/09; 5/14/09
Division	9/11/09; 12/3/09; 3/24/10; 4/7/10; 4/30/10; 6/7/10; 6/17/10; 8/9/10; 8/17/10; 9/17/10; 9/29/10; 10/6/10; 10/13/10
Additional meeting dates	2/23/12; 3/22/12; 5/24/12; 6/28/12; 9/20/12; 10/4/13; 10/16/13; 10/22/13; 10/30/13

III. Evaluation Process and Planned Update Cycle

The fast pace of technological advancement and the critical nature of the task of educating the nation's youth, requires that the evaluation of the progress of instructional technology in the school system be constant and ongoing. A technology plan tends to have bench marks at various times in its life cycle that will provide points of assessment. However, these should be used to focus on the specific target and not arbitrarily used to evaluate the entire plan.

Section V of this Technology Plan serves as an action plan. Each objective has corresponding evaluation strategies. Additionally, the timetable for the technology plan's goals, objectives and strategies (Appendix 1) provides the means for assessing the progress of the district toward its stated technology objectives. These two sections provide the means to evaluate the plan on an annual basis. Each summer members of the planning team evaluate the progress and accomplishments of the previous year and adjust accordingly the targets for the upcoming year.

MCPS uses the following five-year life cycle for its technology planning process:

- Year One – Implementation of the new Technology Plan
- Year Two – Assess and adjust objectives of the Technology Plan
- Year Three – Preliminary assessment and amendment of the Technology Plan
- Year Four – Full evaluation and commencement of the writing process for the next Technology Plan
- Year Five – Completion of the writing of a new Technology Plan for the next five-year cycle

This planning cycle results in a dynamic document that will remain current with the needs of the school system.

IV. Conclusions from Needs Assessment

A. Establishment of Computer Hardware Replacement Budget

Establishing a computer replacement budget has been the number one Technology Department priority in the budget process for the last 11 years, as it will be again this year. *(1:2:4, 4:1:1)* Based on the Virginia Department of Education standards (VDOE, *Education Technology Guidelines*), MCPS should have a computer replacement budget as follows:

MCPS Students (Spring 2014 Count)	9,883
5 to 1 Ratio	1,977
Number of Computers Replaced on a 3 Year Cycle	3127
Annual Budget (based on $1,000 per computer)	$658,867

MCPS has an inventory of 4,794 client computers. The Technology Department has found that through a judicious purchase and management practice, client computers have an effective life-cycle of 5 years. Therefore, a realistic budget calculation, which maintains the school system's computer inventory at its current level, is:

Number of Computers	4,794
Number of Computers Replaced on a 5 Year Cycle	959
Annual Budget (based on $1,000 per computer)	$958,800

The MCPS revenue received in years past under the State Technology Initiative has been $544,000, which is not guaranteed annual funding. The required local match to receive these funds was $119,200 for a combined computer replacement budget of $663,200. In the past, MCPS has only budgeted enough money to meet the state minimum standards for computer replacement, but not enough to maintain its current inventory. "Customers that commit a minimum of 3 percent of their annual operating budget to IT asset management programs and tools can expect a 25 percent reduction in total cost of ownership." (GTSI Corp. *Technology Lifecycle Management: A Model for Enabling Systematic Budgeting and Administration of Government Technology Programs*, p. 5)

MCPS currently has a rich student-to-computer ratio of 2.12 to 1. *(4:1:4). This* far exceeds the state minimum of a 5-to-1 student-to-computer ratio. MCPS may be able to stretch its shrinking budget dollars for computers through the more efficient and judicious placement of inventory.

B. Allocate Sufficient Funds for Wide Area Network and Internet

1. Telecommunications Operation (See Appendix IV, B)

Montgomery County Public Schools has insufficient funds allocated to cover the projected costs of its telecommunications operations. *(1:2:5)*

To make up the revenue shortfall for the 2013-2014 telecommunications operations, MCPS is dependent on the 2012-2013 E-Rate funds of $169,408. All E-Rate funds are subject to being denied or frozen. Therefore, there is no guarantee that funds will be received in the 2013-2014 funding year.

MCPS needs to provide adequate funding to cover the projected expenditures for its telecommunications operations. The Division needs to wean itself from its dependency on E-Rate funding and use these funds toward growth and supplementary expenditures.

2. Bandwidth

The throughput to any site on a network is only as great as the slowest rate of connection on the network. While MCPS is fortunate to currently have close to 1 Gbps WAN connection to each school thanks to the BTOP Grant, increase in demand will cause this to be insufficient in the near future. The VDOE has subscribed to SETDA recommendation that by the 2017-2018 school year bandwidth should be "at least 1 Gbps per 1,000 students/or staff members," and Internal WAN connections from the district to each school "at least 10 Gbps per 1,000 students/staff" for an external connection." *(1:2:6)* (*Fox, C., Waters, J., Fletcher, G., & Levin, D. (2012). The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs. Washington, DC: State Educational Technology Directors Association (SETDA), p. 3*) Therefore, funds must be allocated for capital improvement of bandwidth infrastructure to keep pace with modern standards.

C. Allocate Sufficient Funds for Local Area Network (1:2:7)

1. Implement Replacement Budget for Network Servers

File Servers are instrumental in providing core services to a network. Loss of any one of these machines can cause a part or the whole network to cease to function. Therefore it is advisable to minimize risk by following the Virginia State guidelines to provide a 3-year replacement cycle for this computer-based

equipment (VDOE, Educational Technology Guidelines). *(1:2:1, 1:2:7)* Network servers vary greatly both in specification and cost depending on their function. MCPS has 45 network servers and 37 instants on 8 virtual server setups. Using an average figure of $2,500 per server and $25,000 per virtual server setup, the Division should budget $97,500 annually to maintain the integrity of its network services.

2. Provide for Replacement Cycle of Network Switches

Four buildings still depend on the HP4000M as their core switch, which has reached its end-of-life from the manufacturer. While this switch is still covered by a lifetime warranty, the Division can no longer purchase parts for expansion or upgrade of functionality. At an average conversion cost of $100,000 per building, the school system needs to start budgeting for a phased upgrade. *(1:2:7)*

The MCPS Technology Department has been engaged in an informal wireless project at the schools. Wireless access points provide greater network connection flexibility at the expense of access speed when compared with a hardwired connection. Wireless access points also enable the school system's IP phones to tie into the building's phone system through the use of session initiation protocol (SIP). As funding permits, the school system should continue to pursue the wireless project especially where POE switches reduce the slots of providing electricity to the access points. *(1:2:12)*

The technology represented by both wired and wireless network technology continues to change and improve. Also, this equipment represents a capital expenditure with a 5 year depreciation schedule. MCPS needs recognize in the budget for the life cycle replacement of network equipment.

D. Upgrade Miscellaneous Technology Systems

1. Security Cameras

MCPS should perform a feasibility study for installing outdoor cameras at all elementary and secondary schools. *(1:2:9)*

MCPS should allocate funds for a five year replacement cycle for camera file servers. Currently there are 19 camera servers in MCPS valued at $1,700.00 per server. Thus $6,460.00 should be

allocated per year. As camera servers are upgraded and replaced, MCPS should include the cost to migrating to a more cost effective Linux based solution (Exacq vision).

2. Security Systems

AES, BMS, CMS, and EMHS security systems need to be upgraded to the wireless LAN based system used throughout the Division. *(1:2:10)*

The Identicard keyless entry system that has been introduced as part of the School Security Project should be expanded to eliminate the vulnerability inherent in the old keyed entrances.

3. Telephones

Having a phone in every classroom has long been a goal of MCPS. *(1:2:11)* The vulnerability of having phone service to the classroom interrupted for a prolonged period due to equipment obsolescence represents potential safety issues. MCPS needs to pursue an upgrade path for CHS, SMS, EMHS, Facilities, and Transportation to an IP based PBX system. *(1:2:11)*

MCPS should invest in the migration to Avaya IP Office PBX. This technology will reduce annual telephone operations cost providing greater service and capability.

4. Cellular Telephones

Currently, as part of the E-Rate process for funding year '12-'13, MCPS consolidated its wireless business with a single provider. This has enabled the Division to maximize its E-rate discount and standardize platforms to improve support. MCPS needs to adequately recognize and budget for the true cost of cell phone services.

E. Provide Adequate and Appropriate Staffing

1. Reinstate Supervisor of Instructional Technology position

In 1997 the positions of Supervisor of Instructional Technology and Supervisor of Electronic Maintenance were merged to create the position of "Director of Technology." Since then, the number of employees in the Technology Department has grown from 15 to 26. Consolidating all department supervisory roles into one directorate position has revealed a vulnerability to the efficient operation of the Division. Reviving the position of Supervisor of Instructional Technology would provide a higher level of

instructional support as well as necessary administrative support for the Director of Technology. *(1:2:16)*

This situation was targeted for resolution in the 2007 Technology Plan. In the Action Plan, the strategy was to "upgrade Technology Coordinator of Curriculum position to Instructional Technology Supervisor." Implementing this strategy would have little or no budgetary impact. In 2007, the administration realized the benefit of reviving the supervisory position but required the Technology Coordinator of Curriculum attain an endorsement in Administration and Supervision. After the requirement was fulfilled, changing the position was tabled due to the impending budget crisis.

MCPS should complete the process started under its 2007-2012 Technology Plan and upgrade the Technology Coordinator of Curriculum position to Instructional Technology Supervisor.

2. Place Instructional Technology Resource Teachers on Appropriate Salary Scale

When the ITRT position was added in 2005, the precedent set for compensating Instructional Technology Resource Teachers for additional hours of work was followed. The ITRT was placed on the Teacher's Salary Scale and was issued a supplemental contract for an additional two weeks work (one week before the start of the school year and one extra week at the conclusion of the school year), as well as an extended day in order to accommodate both the elementary and secondary contract hours.

A new salary scale should be created to compensate ITRTs adequately for their job responsibilities. This would ensure that their salary is not impacted by budget reductions, and would also ensure that their entire salary counts toward their VRS retirement, which their current supplemental contract does not.

3. Add Additional Steps to Technicians' Salary Scale

The support service staff salary consists of 12 steps. This can be beneficial for employees in cases where top salary is reached early and earned over the balance of tenure. However, in many cases the top salary represents a ceiling or salary cap that does not keep pace with the employment market. *(1:2:17)* As a result, it is difficult to retain skilled employees in MCPS. A comparison of salaries of MCPS employees and comparable positions within the region, taken from the *State of VA: Labor Market Information* website (www.VirginiaLMI.com) is as follows:

Annual Wage or Salary OES Survey Data for May 2011 in Blacksburg-Christiansburg Statistical Areas

Occupational Title	Regional Entry Level	State Average	Regional Median	Regional Experienced	MCPS Entry	MCPS Top	MCPS Employee Average	MCPS Years Exp.
Computer Support Specialists	$31,647.00	$51,543.00	$37,324.34	$42,568.01	$33,672.00	$40,668.00	$37,106.40	19 yrs.
Telecommunications Equipment Installers and Repair	$29,559.00	$56,493.00	$42,154.00	$53,552.00	$33,672.00	$40,668.00	$40,731.78	55 yrs.
Network Systems and Data Communications Analysts	$45,789.00	$82,176.00	$62,108.00	$75,592.00	$33,672.00	$40,668.00	$40,668.00	30 yrs.
Database Administrators	$41,919.00	$87,160.00	$59,870.00	$80,464.00	$40,668.00	$47,092.00	$42,394.05	23 yrs.

F. Technology Integration

1. Increase Awareness of Technology Resources (4:2:1, 4:2:2)

The Instructional Technology Resource Teachers (ITRTs) are an invaluable resource to MCPS. ITRTs should strive to increase awareness of available technology resources in the following ways: *(2:3:1)*

- Provide professional development to individuals as well as to groups in a variety of settings.
- Create and assist with creation of technology-integrated lessons.
- Model effective technology-integrated lessons.
- Include resource information in newsletters and on Instructional Technology Website.

2. Evaluate Technology Resources

A. Provide Adequate Equipment for Instruction

MCPS should continue to configure all Division learning environments as 21st Century Classrooms. *(4:1:6) Doing* so will require:

- A complete evaluation of technology available in classrooms at each site
- Financial support from Division Leadership
- A detailed, equitable implementation plan for configuring existing school sites to the standard

To meet the need of establishing a standard 21st Century Classroom in Montgomery County Public Schools the following model has been established:

The Technology Classroom

While the 21st Century Classroom must meet the objectives of 21st Century skills, the classroom configuration must remain flexible enough to meet the individual needs of students and teachers. (4:2:2) Users must define the technical functionality intended, so that the classroom can fully provide the instructional space required. (4:1:2) For standardization purposes a 21st Century Classroom has been defined to contain certain components as outlined in the following chart.

Standard Configuration for Classroom and Computer Lab
DVD/CD Combination Unit – a convergence of two electronic units into one.
Table Top Document Camera – able to display paper, transparencies, or three-dimensional objects for whole group instruction.
Mobile tablet device that permits teacher a wide range of possibilities while providing classroom instruction.
Desktop Computer with updated desktop specifications –personal computer intended for use in a single location with an adequate processor, appropriate memory for necessary applications, and headphone/microphone combination for audio recording, collaborating and virtual learning. *(3:1:3)*
LCD Computer Monitor – thin, flat, computer display screen.
Stereo Speaker System – wall mounted speakers with amplifier for basic classroom audio.
Wireless Assisted Listening System – voice amplification system for classroom instruction via wireless microphone
Telephone – allows room-to-room communication as well as communication with individuals outside school site
Lectern – work surface for instructor
Overhead Transparency Projector on Moveable Cart – project transparent objects for whole class instruction
LCD Projector - displays computer screen
Projection Surface – surface for projected images
Interactive Whiteboard – large interactive display that connects to a computer and projector and allows users to control the computer using a finger, or stylus. *(4:2:7)*
Personal Response System – means for instructor to electronically interact with and collect data from students
Flatbed Scanner – creates electronic copy of paper document

Other Considerations

Other considerations for the standard 21st Century classroom include software, assistive technology, specialty areas, and technology procurement. All standard MCPS classrooms are evaluated to contain the software needed to meet their specific academic needs. *(1:2:2)* A software needs assessment is completed in conjunction with curriculum supervisors, teachers, building principals and Technology Resource Teachers (TRT). Software required for all MCPS equipment, testing applications, productivity software, and remediation programs are among the considerations in the needs assessment. (3:3:1)

Specialty areas such as computer labs, CTE rooms/labs, mobile carts, and media centers in MCPS are configured as a standard classroom. However, they also contain:

- Multiple computers which allows one-on-one computing for each student

- Specialty equipment such as computers equipped for instruction in AutoCad, Family and Consumer Science modules, Media Center Inventory equipment, etc.

To create the "Least Restrictive Environment" for special needs students MCPS provides assistive technology as needed. The need for assistive technology is determined by Special Education staff, and then acquired in conjunction with ITRTs. *(4:1:2)* Special Education Staff and ITRTs work together to train students and staff members in the use of Assistive Technology.

Technology equipment is acquired through a process that ensures all equipment is under warranty and in line with the latest in industry standards, as well as maintaining a low cost of ownership.

The 21st Century Classroom includes hardware and software designed to provide teachers and students with appropriate tools for 21st Century learning. In order to sustain this current model the following must be allotted:

- Recycle schedule of 3-5 years for computers
- Projector bulb replacement every two years
- Recycle schedule of 3-5 years for iPad and/or Windows tablets
- Division-wide software subscriptions of approximately $12,000 per year
- Repair/maintenance contingency on other equipment to include sound systems, document cameras, and Smartboards.
- Allowance for new technologies that arise

B. Participate in Pilot Projects Involving Emerging Technologies *(4:3:1, 4:3:2, 5:3:1)*

MCPS should continue efforts toward instructional integration of interactive technologies. MCPS should continue to develop and implement projects such as the current E-Learning Backpack Initiative pilot where four classrooms are piloting a one-to-one initiative of Apple and Windows interactive tablets. Another emerging technology on the horizon is exploring the instructional benefits of Google Apps, cloud-based applications and storage. Several elementary, middle, and high school classrooms have been selected to pilot Google Apps in order to foster collaboration and improve communication among peers and educators. MCPS has participated in piloting fully virtual courses, such as the VDOE Economics and Personal Finance Course. With great success, this course will continue to be offered to MCPS students virtually. Recently, MCPS adjusted policy which will allow students to "Bring Your Own Device" for instructional use. MCPS teachers should continue to explore and plan opportunities for students to integrate interactive technologies to promote engagement and foster learning.

C. Utilize Available and Procure Needed Instructional Software/Applications

A wide variety of instructional technology applications are used in MCPS. As technology evolves and instructional and administrative needs change, applications may become obsolete. In an effort to ensure that instructional needs are being met and technology is current, MCPS has adopted the Technology Lifecycle Model for the planning, procurement, implementation, and evaluation of technology-based systems. *(4:3:3* The following diagram is a graphical illustration of the Lifecycle Model:

Phase V of the Life Cycle is "Technology Refresh". Phase V is comprised of the following tasks:

1. Assess the degree the technology has achieved original goals.
2. Refocus the implementation to achieve desired outcomes.
3. Redefine the scope of the technology based on accumulated data.
4. Enhance the implementation through logical states of development.
5. Discard the Software

"Establishing a refresh schedule based on historical performance and usage requirements in 2-5 year cycle will improve overall IT infrastructure performance by reducing downtime and decreasing costs." (GTSI Corp. *Technology Lifecycle Management: A Model for Enabling Budgeting and Administration of Government Technology Programs*, p. 6). Based on the predefined criteria of the process, technology should be abandoned when it is no longer cost effective or instructionally effective.

MCPS Curriculum Supervisors and Instructional Technology staff should increase collaborative efforts in the evaluation of instructional software and applications.

Through discussions between Curriculum Supervisors and Technology staff during the technology planning process, the need to extend, refresh, and procure applications was identified. Following are details:

1. Montgomery County Watershed Database

   MCPS teacher have access to a database of water quality testing results within the county for instructional use. TRTs have become familiar with the use of the watershed database in order to provide assistance to teachers who wish to utilize the database during the implementation phase of the project. As the project is utilized teachers will become more independent in their use of the resource, as already evidenced by science teacher's use at Auburn High School. *(4:2:4, 5:2:2)*

2. Edmentum Suite

The new Edmentum 3-year contract offers a wide array of online resources. Included in the Suite is PLATO, a web-based application that provides cross-curricular differentiated instruction. *(2:2:1, 3:3:4, 5:2:3)* Project A.I.M. takes full advantage of this resource in order to offer credit intervention, credit recovery, and credit acquisition courses to students who are struggling or have fallen behind their graduation cohort. Content teachers need to have opportunities to explore PLATO content for differentiated instruction, virtual assignments, tutoring, SOL preparation and SOL remediation. PLATO includes pre-assessments, prescriptive lessons, and post assessments that provide data to track student progress.

Another part of the Edmentum Suite is Study Island, which offers support for students struggling with the Standards of Learning assessments. Included as well is ESL Read Smart, which is a valuable program, used with English as a second language learners.

Reading Eggs and Education City are programs geared toward elementary age children and include all core curriculum areas.

Edumentum Assessments offer instructional staff an opportunity to pre-assess students in their content area in order to provide proper placement in a subject area.

3. Interactive Achievement – onTRAC Learning Management System

onTRAC Learning Management System is in its fifth year of use in MCPS. It is currently used to administer benchmark tests in Language Arts and Math in grades 2 through 8, as well as Algebra I, Geometry and Algebra II, which are most commonly created by the Math and Language Arts Curriculum Supervisors and Instructional Resources Teachers/Coaches. Additionally, classroom

teachers use the application to create assessments. Teachers and coaches disaggregate, interpret, and use data from onTRAC assessments to refine instruction. Use of the application should be extended by:

- Considering testing in other subject areas (2:1:4, 3:3:3, 4:3:5, 5:3:2, 5:2:1, 5:2:2, 5:2:3)

4. Educational Technology Software and Equipment Inventory Tool

   As technology has emerged as an integral tool for instruction in regular and special education, a variety of software applications and technology equipment has been purchased by Division departments and staff. Currently there is no Division-wide inventory of these applications. Many of these applications would also benefit regular education students. If a database of software purchases and implementations was maintained, resources would be more easily accessed and available for use throughout the Division. *(4:3:6)*

5. Library Management Software

   Destiny is the Library Management Software used in MCPS. It is a locally hosted centralized database. Patrons are managed by a SIF agent at the division level. Media Specialists purchase and manage materials at each individual site.

3. Utilize Available and Procure Needed Applications/Support Software (4:2:3)

Through the use of a variety of software and applications, MCPS technology staff is able to provide timely service and support to Division users. Not only should MCPS technicians continue to use tools available, but they should also keep abreast of current resources that will improve efficiency and ensure proper and equitable allocation of resources.

A. Assure Proper Allocation of Network Resources

MCPS uses multiple applications to monitor the health of the network. The Division needs to study the current process to develop a systematic and efficient practice. *(1:2:8)*

G. Website

The MCPS Website is a critical communication venue. School pages are maintained by school personnel and department pages are maintained by individuals within each department. Consideration should be given to providing monetary compensation for school web masters.

The current open source content manager system used by the division (Modx) is minimally sufficient, but is difficult to support and enhance. As part of the E-rate process, Sharp School was selected as a provider of a K12 web-hosted content manager provider. This product would provide a less vulnerable, fully supported, robust solution for the Division's website. Unfortunately, the Division was unable to support the solution in the 2014-15 Budget. It should obtain and implement a Web Content Management application. *(1:2:18)*

H. Professional Development

Professional development efforts improve and enhance effective instruction and stimulate professional growth among teachers. *(2:1:1, 4:2:1)* In collaboration with Curriculum Supervisors, the Technology Department is working to provide comprehensive professional development for MCPS teachers and staff. Through this collaboration, the following needs have been identified:

1. Repository for Teacher Resources

Moodle is widely used within MCPS. Although the primary use of this application is as a Course Management System, it can also act as a central repository for teacher resources. This has been identified as a need within the Division and can be met through collaboration among MCPS instructional staff and the use of Moodle. Instructional Supervisors have worked to house materials for teachers in math, science, social studies and English within the Moodle environment. *(1:3:2, 4:2:6, 5:3:3)*

2. Electronic Registrar Online (ERO) (5:1:3)

ERO was purchased and implemented in 2008. This application can be used by administrators to create course catalogs, manage registration and keep track of all learning activities. At present ERO is not being used to its full potential. The Division needs to continue exploring new uses for this resource.

3. New River Community College (NRCC) courses

Technology Coordinators and Instructional Technology Resource Teachers have been offering technology courses for recertification in conjunction with NRCC for the past five years. *(1:1:5, 1:3:3, 2:1:3)* The courses are taught in the computer lab at the MCPS Technology Department, as well as at various school sites throughout the division. Teachers continue to register for and complete the courses and offer positive feedback. Instructional Technology Staff will continue to offer these courses, as well as develop new courses as long as the need exists.

NRCC Courses Include:

- "The Interactive Classroom" (Moodle, Smart Notebook, Smart Response, Video creation and editing, Google Apps.
- "Catching Up With Technology in Education"
- "Smart Notebook Integration"

4. Community Outreach

Often, students are much more proficient in the use of technology than parents. This can make it difficult for parents to provide academic support when needed. In an effort to better support students, MCPS needs to provide technology classes to parents. Often schools are viewed by community members as being the center of the community. Therefore, it would be logical to provide opportunities of this nature using school computer labs at times convenient for parents and community members. *(1:1:9, 1:1:10)* Also, MCPS should create and distribute a survey to parents and community members to obtain information about specific instructional technology needs. *(2:2:4, 5:1:2)*

5. Build Awareness of Chemoventory (4:2:5)

Chemoventory provides a searchable database of Material Safety Data Sheets (MSDS) for all hazardous materials found in science and career and technical classrooms, as well as custodial areas. CTE and science teachers, as well as custodial staff have been made aware of the application and its importance, and currently employ it as instructed.

I. Student Information

1. PowerSchool Training Program

To ensure that all new employees are adequately trained in the use of the student information system, a comprehensive training program should be developed. *(5:1:1, 5:2:1)* Also, proper training in data creation and maintenance should be used to better ensure data integrity. The process for developing the training should include:

- Analyze employee processes and tasks
- Determine and organize training content
- Select delivery method
- Implement training

2. Web-based documentation

An important aspect of the initial training for PowerSchool was the creation of help documents. *(5:1:1) Great* effort was made to ensure the documents are useful and as inclusive as possible. They are current, accessible at any time for any user and are posted to the MCPS website.

3. Parent/Student Portal (5:1:5)

One of the most appealing functions of the PowerSchool program is Parent/Student Portal. *(5:1:4)* Using a login and password, parents and students are able to access attendance, grading, and other on time information relating to the student/s.

4. Interactive Achievement – onTRAC Longitudinal Data System

Interactive Achievement – onTRAC Longitudinal Data System provides quick retrieval and safe storage of data and meets the requirements of an effective data warehouse (5:1:6):

- Allows ongoing reporting which does not stop or hinder the normal operations.
- Allows a single location for reporting data so that all data users in the organization have access to the same data.
- Optimizes data security, disaster recovery, and archival.
- Provides efficient reporting because data is available in retrievable forms.
- Makes data available for all users.
- Allows data inconsistencies and errors to be more easily located and changed.

J. Virtual Education *(1:1:1)*

1. Provide Appropriate Virtual Education Training

With the increased demand for locally developed online courses, there is a growing need to provide formal training to teachers in online instruction. An introductory course that addresses methods and techniques for teaching in an online environment has been outlined for future development and delivery. (*1:1:6)*

Because virtual education is now an integral part of most school divisions, formalized training needs to be provided to Guidance counselors on how to identify and assist potential online learners. *(4:3:4)* This training will involve characteristics of successful online students, as well as a rubric for allowing students to self-assess whether online courses might be the right fit for them. Initial training was provided to all secondary guidance counselors by the Virtual Education Coordinator and the Supervisor of Language Arts

21st Century Learning Labs should be supervised by highly qualified, content-area teachers that are technologically literate. A comprehensive training program should be provided to ensure that daily operations are appropriately executed. Currently, labs are staffed by highly qualified Project A.I.M. teachers in math, science, social studies, and English, as well as non-certified Virtual Lab coaches. *(1:3:1, 1:3:4)*

2. Acquire Additional Hardware and Software Appropriate for Virtual Education

As virtual resources continue to be used to support traditional instruction, the Division should develop a comprehensive plan for developing a functional, reliable and readily available "instructional server farm."

Currently, MPCS runs its course management system (Moodle) on two servers; one for teacher/student instructional purposes and the other for staff professional development. This requires all aspects of online instruction be housed on each of the servers, which could pose potential risks due to the potential heavy server demand. MCPS needs to invest in cloud-based storage such as Google and You-Tube, as well as utilize virtual servers. *(1:2:3)*

MCPS currently offers the following methods of interaction for its virtual courses, most of which are asynchronous: chat, instant messaging, discussion boards, teacher cell phones, and email. Because quality online instruction requires frequent, in-depth "teacher-student" and "student-student" interaction, MPCS should budget for interactive software that allows for synchronous instructional time. *(1:2:13)*

Virtual education courses require that students have daily access to a computer and the Internet. In order to ensure that those students who may not have a computer and high-speed Internet at home are able to access online courses, daily instructional time in an appropriate environment must be provided. MCPS needs to provide daily access to fully equipped, 21st century lab environments that are appropriately staffed through an extended school day. This will require further investigation and resources that are not currently available due to budget shortfalls over the past several years. Therefore, partnerships within the community and with public libraries should be explored as well.

3. Expand Virtual Education Courses

There are ample opportunities for students to enroll in high level online courses, such as Honors, Advanced Placement, and Dual Enrollment. Virtual education should be available to all ability-level students, though. Therefore, virtual courses should be expanded in order to provide access to general level courses, especially those that serve as a barrier to graduation.

Virtual learning can take place anywhere regardless of time or place. Because of this flexibility, MCPS should explore the potential of a comprehensive "Summer Virtual Academy." *(1:1:4)* Though this would require an initial up-front investment, it would also translate into long-term cost saving for the division, as it would eliminate cost factors associated with a traditional summer school program (transportation, meals, building operations, etc.).

Traditional scheduled schools often find students failing a course at mid-term with little hope of successful completion. A hybrid virtual education program can afford those students (who would be an appropriate fit for an online course), an opportunity for credit intervention, credit recovery, or even credit acquisition. MPCS has since established an instructional/operational model, known as Project A.I.M., that takes advantage of such instructional methods, thus allowing opportunity to maintain a student's pace for on-time graduation. *(2:2:3)*

Virtual courses have traditionally been viewed as an option for students with unique circumstances; such as scheduling conflicts or late enrollment. MCPS should develop a virtual instructional/operational model that encompasses the full potential of online instruction. *(1:1:8, 1:1:2)*

4. Expand Online Professional Development Opportunities

Online instruction continues to grow as the instructional model of choice for adult learners. Its asynchronous nature affords people the opportunity to participate in professional development during an individual's maximal learning time. MCPS should continue to expand online opportunities for its teachers and staff. *(2:1:2)*

5. Establish Secondary Virtual High School

Virtual education continues to grow at a phenomenal global rate. In order to ensure this important educational opportunity is provided to students, MPCS should explore the formal establishment of a virtual high school. *(1:1:3)* This will involve extensive research regarding daily operations, instructional procedures, costs, and maintenance associated with such a venture. A virtual school should be considered as having no less value than that of a traditional high school. It would serve as another option of school choice for students, parents, and the community at large.

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.

Note: Number(s) in parenthesis reference page(s) in Needs Assessment

Strategies	Evaluation
1:1:1: Expand virtual course offerings for students through Virtual Virginia and division created courses. *(p. 24)* • Collect information about what is currently being offered as "stand alone courses" or in support of face-to-face courses. • Analyze findings to identify gaps and overlaps in current offerings • Communicate findings to stakeholders. • Evaluate local and state policies that promote or restrict online courses.	**1:1:1:** Before and after, analyze the frequency counts of virtual courses offered through Virtual Virginia and MCPS. Note the continuum of opportunities available to MCPS high/middle school students.
1:1:2: Develop an instructional/operational model that encompasses the full potential of online instruction. *(p. 26)*	**1:1:2:** Collect data at school level regarding the reason(s) student(s) enrolled in a virtual course.
1:1:3: Explore the formal establishment of a virtual high school. *(p. 26)*	**1:1:3:** Locate, study, and evaluate available research on existing virtual high schools including issues related to daily operations, instructional procedures, cost, maintenance, staffing, etc.
1:1:4: Explore the creation of a comprehensive "Summer Virtual Academy." *(p. 25)*	**1:1:4:a:** Evaluate those online opportunities by surveying students/staff to identify needs.
1:1:5: Leverage higher education partnerships to assist schools in instructional design and media production. • NRCC courses offer training in media production tools such as Movie Maker, Photo Story, Audacity, and Moodle. *(p.22)*	**1:1:5:a:** Document and cite how the number and types of higher education partnerships differ from previous years. **1:1:5:b:** Cite the accessibility and usefulness of the professional development program by participant evaluations.
1:1:6: Develop a training course for virtual, blended, and face-to-face instructors that emphasizes basic knowledge and essential skills necessary for an online environment. *(p.24)*	**1:1:6:** Determine if the course adheres to national standards using NACOL's Guidelines and satisfies VA standards.

1:1:7: Explore the creation of Professional Learning Communities by utilizing ERO. *(p. 21, 22)*	**1:1:7:** Survey the impact of Professional Learning Communities through the use of ERO.
1:1:8: Ensure all instructional leaders (Principals, assistant principals, coaches, department chairs, etc.), teachers, students, and parents are aware of virtual learning opportunities for students and then provide support for implementation. *(p. 26)*	**1:1:8:** Cite the number and frequency of related communications regarding virtual education via Student Handbook, newsletters, workshops for students, parents, staff, and the number of students/staff who report participating in virtual learning opportunities.
1:1:9: Open MCPS computer labs for community use. *(p. 22)*	**1:1:9:** Compile data that reflects the number of times computer labs are used (cite date and time) by community members.
1:1:10: Offer technology sessions for community members. *(p. 22)*	**1:1:10:** Survey those community members that attend in order to determine effectiveness of each session and also to make necessary revisions.

Objective 1:2: Provide the technical and human infrastructure necessary to support real, blended, and virtual learning environments.

Strategies	Evaluation
1:2:1: Develop a comprehensive, 3-year plan that addresses instructional server costs, deployment, and maintenance. *(p. 10)*	**1:2:1:** Determine if budgeted funds are adequate to address upgrades and replacement.
1:2:2: Provide students with appropriately furnished and fully equipped 21st Century Virtual Learning Labs that adequately address all components necessary for online learning: high-speed Internet, up-to-date computers, headphones (with microphones), video recording capability, appropriate software, and are staffed by highly qualified content area instructional personnel. *(p. 15)*	**1:2:2:a:** Show evidence that Virtual Learning Labs meet the standards of a 21st Century Learning environment. **1:2:2:b:** Student and staff evaluation used to identify needs.
1:2:3: Invest in hardware that supports instruction in various learning environments, with a primary focus on video and instructional servers that are dedicated to housing various, multi-media and instructional content. Conduct a thorough study to ensure appropriate hardware will handle the rigorous demands of virtual, blended, and face-to-face instruction. *(p. 25)*	**1:2:3:** Confirm the hardware needed to support learning environment instruction is adequate and make needed improvements.
1:2:4: Establish a computer replacement budget that is adequate to both meet the State minimum standards for computer replacement and maintain current inventory. *(p. 8)*	**1:2:3a:** Make yearly budget recommendations in order to meet computer replacement needs.
1:2:5: Secure adequate local funding to support an effective Wide Area Network and Internet Connection. • Recognize the full expenditure for projected wide area network and Internet operational needs in the budget process. • Utilize revenue generated from E-Rate reimbursement through the Universal Service program for onetime only technology expenditures. • It will meet or exceed standards for infrastructure necessary to participate in online-SOL testing. *(p. 9, 64)*	**1:2:5:a:** Compare locally budgeted monies to the actual costs related to telecommunications operations for a three-year period in order to minimize dependency of E-Rate monies to fund such operations. **1:2:5:b:** Implement upgrades to achieve 100 mbps to 10 Gbps Ethernet throughputs by allocating necessary funds.

1:2:6: Implement 100 Mbps fiber connection to all schools and sites. • Maximize the use of private fiber connections to sites to increase bandwidth and control continuing operational costs. • Incrementally increase bandwidth to 100 Mbps across the Wide Area Network. *(p. 9)*	**1:2:6:** Cite status of current fiber connection to schools and sites and compare to updates of bandwidth as they occur.
1:2:7: Establish a local budget that adequately funds a local area network to ensure the replacement of network servers and switches to • Continue to study the feasibility of the use and deployment of VM technology. • Cycle the HP 4000M switch out of circulation • Begin budgeting for a phased upgrade to 19 buildings at a cost of $100,000 per building. *(p. 9, 10)*	**1:2:7:** Cite current network server life cycles. Anticipate and budget for cost of necessary replacement.
1:2:8: Assure the proper allocation of network resources through the procurement of an appliance that will set network traffic priorities of instructional applications and that adequately functions with the projected wide area network upgrade; investigate an application appropriate for configuration "push-outs" to upgrade desktop computers; and determine a systemic and efficient practice for monitoring the health of the network. *(p. 21)*	**1:2:8** Monitor and catalog network access to instructional applications and resources.
1:2:9: Establish a replacement budget (between 3-5 years per server) for current security camera equipment (servers, cameras, etc.) • Perform a feasibility study for installing outdoor cameras at all elementary and secondary schools. *(p. 10)*	**1:2:9:** Report yearly budget allocations for security camera maintenance
1:2:10: Upgrade AES, BMS, CMS, and EMHS security systems to the wireless LAN based system that is currently used throughout the Division. *(p. 11)* • Implement keyless entry system for all buildings	**1:2:10:** Document system upgrades and associated costs.
1:2:11: Consideration should be given to the following phone upgrades: • All classrooms should have a phone • MCPS needs to pursue an upgrade path for CHS, SMS, EMHS, Facilities, and Transportation to an IP-based PBX system. *(p. 11)*	**1:2:11a:** Record the number of classroom phones **1:2:11b:** Record upgrades to each location. **1:2:11c:** Document implementation

• Budget for & adequately fund District cellphone plan.	process and record district-wide deployment. **1:2:11d:** Document that funding has been implemented.
1:2:12: Facilitate the implementation of broader access to wireless Internet in every school. *(p. 10)*	**1:2:12:** Report appropriated funds to phase in wireless access points to accommodate wireless network access in each school campus.
1:2:13 Review various interactive whiteboard applications for 21st century learning environments. Invest in the online application that best meets the needs of the instructional program. *(p. 25)*	**1:2:13:** Identify the effectiveness of the interactive application by surveying users.
1:2:14: Provide resources and support for one instructional technology resources teacher (ITRT) per 1,000 students to assist teachers in integrating technology into teaching and learning. *(p. 74, 76)*	**1:2:14:a:** Document the resources and support provided by the state to reach its objective. **1:2:14:b:** Cite the ratio of ITRT to students by school division to determine the extent to which the actual count matches the one ITRT per 1,000 students guideline.
1:2:15: Provide resources and support for one technical support position per 1,000 students to ensure that technology and infrastructure is operational, secure, and properly maintained. *(p. 71)*	**1:2:15:a:** Document resources and support provided by the state to reach this objective. **1:2:15:b:** Cite the ratio of technical support personnel to students by school division to determine the extent to which the actual count matches the one technical support position per 1,000 students guideline. **1:2:15:e:** Record the extent to which fiber and 100 Mbps to 1 Gbps Ethernet have been implemented in every school.
1:2:16: Complete the process started under the 2007-2012 Technology Plan and upgrade the Technology Coordinator of Curriculum to Instructional Technology Supervisor. *(p. 12)*	**1:2:16:** Document the position upgrade.

1:2:17a: Place Instructional Technology Resource Teachers on an appropriate salary scale that reflects their additional contract hours. *(p. 12)*	**1:2:17a:** Document the salary scale.
1:2:17b: Add additional steps to the Technician's Salary Scale in order to bring them more in line with comparable technician salaries in other jobs. *(p. 12, 13)*	**1:2:17b:** Document the additional of salary steps.
1:2:18: Obtain and implement a Web Content Management System for MCPS school and department web pages to maintain a consistent theme and current information. *(p. 21, 92)*	**1:2:18:a**: Describe the Web Content Management System and detail its implementation. **1:2:18:b:** Survey site visitors periodically to determine strengths and weaknesses of web site and revise accordingly.

Objective 1:3: Provide high-quality, technology-related professional development to help educators create, maintain, and work in variety of learner-centered environments.

Strategies	Evaluation
1:3:1: Identify and train instructional staff interested in using online resources to teach online and/or utilize blended/hybrid instruction, especially in those content areas with classes that often become barriers to graduation. *(p. 24)*	**1:3:1:** Survey teachers to determine those interested in teaching online.
1:3:2: Establish a central repository for managing courses with instructional re-sources with web-based documentation. *(p. 21)*	**1:3:2:** Record where and how teachers access instructional resources.
1:3:3: Develop additional NRCC Professional Development courses that emphasize technology use and integration and assist teachers with appropriate courses for re-certification. *(p. 22)*	**1:3:3:** Survey teachers to identify needs for continual and additional offerings.
1:3:4: Develop a training program for virtual lab coaches that cover essential information necessary for managing and operating an online learning environment and traditional lab setting. *(p. 24)*	**1:3:4:** Survey those who have completed the course in order to determine strengths, weaknesses, and plan for necessary revisions.

1:3:5: Identify, develop, disseminate, and maintain resources to support the effective use of technology in all curricula by teachers at all levels of integration expertise. *(p. 83)*	**1:3:5:** Examine the extent to which the State identifies, develops, disseminates, and maintains the resources needed to support the effective use of technology across curricula and at varying levels of integration expertise.
1:3:6: Leverage public/private/nonprofit partnerships to provide professional development focused on technology integration strategies and the development of teachers' and administrators' 21st century skills. *(p. 80)*	**1:3:6:a:** Document how the number and types of partnerships differ from previous years with emphasis on 21st century skills. **1:3:8:b:** Record the professional development program attendance.
1:3:7: Support pilot projects and grants 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. 79)*	**1:3:7:a:** Document efforts to support pilot projects, as well as new and emerging Technologies and strategies for technology integration in schools. **1:3:7:b:** Describe the number, types, locations, and scope/extend of the pilot projects.

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.

Strategies	Evaluation
2:1:1: Facilitate the development or use and delivery of innovative professional development that promotes collaboration. *(p. 21)*	**2:1:1:a:** Describe the types, scope/extent, and accessibility professional development opportunities and the extent to which these opportunities facilitate the development or use and delivery of innovative professional development that promotes collaboration. **2:1:1:b:** Record the professional development program attendance.
2:1:2: Expand online professional development opportunities for teachers and staff in order to maximize learning time. *(p. 26)*	**2:1:2:** Inventory professional development opportunities at the beginning of each year.
2:1:3: Develop additional NRCC courses and professional development opportunities that emphasize technology use and integration and assist teachers with appropriate courses for re-certification. *(p. 22)*	**2:1:3:a:** Survey teachers to identify needs for additional offerings. **2:1:3:b:** Catalog the professional development program opportunities.
2:1:4: Expand the use of Interactive Achievement by clarifying the administration of the program and prompting teacher created assessments, testing in other content areas in addition to English and math. *(p. 20)*	**2:1:4:a:** Determine the number of teacher-created assessments over a defined time period. **2:1:4:b:** Identify content areas for future use.

Objective 2:2: Actualize the ability of technology to individualize learning and provide equitable opportunities for all learners.

Strategies	Evaluation
2:2:1: Provide training on Edmentum/PLATO to provide teachers opportunities to become familiar with, and explore the program, make assignments, edit curriculum, and access reports. *(p. 19)*	**2:2:1:a:** Survey teachers on strengths and weaknesses of training session. **2:2:1:b:** Compile number of PLATO courses/assignments created and used by trained teachers.

2:2:2: Provide training for secondary reading, English, and Special Education teachers in the use and promotion of Lexia. *(Lexia has since been abandoned and replaced by Scholastic Reading.)*	**2:2:2:** Survey attendees on strengths and weaknesses of training session. *(Lexia has since been abandoned and replaced by Scholastic Reading.)*
2:2:3: Establish instructional/operational model for 7-period schools that provides appropriately identified students who may be at risk of failure an opportunity to restart a course at mid-term in order to stay on track for on-time graduation. *(p. 26)*	**2:2:3:** Review pass rate for such intervention.
2:2:4: Survey parents and community members to assess instructional technology needs. *(p. 22)*	**2:2:4:** Compile survey results to determine instructional courses that should be offered.
2:2:5: Provide resources and support for TRTs and Virtual Lab Coaches to assist teachers in integrating technology into teaching and learning. *(p. 92)*	**2:2:5:** Assess the number of internal workshops, peer coaching, communication/resource dissemination, and number of technology integration related conference attendance.

Objective 2:3: Facilitate the implementation of high-quality Internet safety programs in schools.

Strategies	Evaluation
2:3:1: ITRTs should strive to increase awareness of technology resources. *(p. 13)* • ITRTs will provide professional development. • ITRTs will assist in the creation of technology-integrated lessons. • ITRTs will model technology-integrated lessons. • ITRTs will provide resource information in newsletters and on the website.	**2:3:1:a:** Number of Internet Safety web-based materials made available. **2:3:1:b:** Number of Internet Safety workshops and communications disseminated.
2:3:2: Identify and disseminate best practices and resources to promote the integration of Internet safety and security throughout the curricula. *(p. 61)*	**2:3:2:** Record the number of resources distributed.
2:3:3: Continue the implementation of Internet safety policies and programs and provide technical assistance and support to ensure that schools have effective programs and policies. *(p. 61)*	**2:3:3:** List the programs and technical assistance and support provided.
2:3:4: Promote the safe and responsible use of social media. *(p. 61)*	**2:3:4:** Describe division efforts to promote safe and responsible use of social media.
2:3:5: Identify and disseminate resources to help the School Board and administrators develop and evaluate technology policies that effectively balance the need for instructional innovation with safety and security. *(p. 61)*	**2:3:5:** Cite the resources use that help school boards develop and evaluate technology policies.

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 and support professional development that increases the capacity of teachers 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.

Strategies	Evaluation
3:1:1: Identify and disseminate information and resources that help schools provide ongoing, personalized, and just-in-time professional development for teachers implementing technological and pedagogical innovations. *(p. 92)*	**3:1:1:** Cite the resources and the extent to which these information sources are accessible and useful with regard to giving ongoing, personalized, and just-in-time support.
3:1:2: Enhance curricula using Internet resources and software that encourage creativity, collaboration, and problem solving. *(p. 92)*	**3:1:2:** List the web resources and software, including their instructional objectives and their availability.
3:1:3: Provide opportunities for students to participate in global communication and collaboration, both of which are essential skills in a 21st Century learning environment. *(p. 15)*	**3:1:3:** Describe efforts to provide students with opportunities to participate in global communication and collaboration.

Objective 3:2: Ensure that students, teachers, and administrators are ICT (Information and Computer Technology) literate. *(This objective was dependent upon Federal Title IID monies, which were discontinued before any of the strategies could be fully implemented and realized.)*

Strategies	Evaluation
3:2:1: Identify and disseminate information and resources to ensure that schools can effectively assess and report ICT.	**3:2:1:** Describe the identification and dissemination procedures.
3:2:2: Monitor the assessment of ICT literacy in schools and provide technical assistance and support to schools as needed. • Utilize Title IID monies for student computer literacy assessment	**3:2:2:** Cite the support efforts with regard to helping localities find resources to assess ICT literacy.

3:2:3: Provide and support high-quality professional development focused on the acquisition and application of ICT skills for teaching, learning, and school management.	**3:2:3:a:** Describe the development of ICT-related professional development for teaching, learning, and school management. **3:2:3:b:** Record the professional development program attendance.
3:2:4: Provide opportunities for teachers and students to learn to deconstruct and construct media messages.	**3:2:4:** List the opportunities provided to teachers and students to deconstruct/construct media messages.

Objective 3:3: Implement technology-based formative assessments that produce further growth in content knowledge and skills development.

Strategies	Evaluation
3:3:1: Identify and disseminate information about technology tools and systems to help schools implement cognitively-based assessments. *(p. 15, 79)*	**3:3:1:** Describe the identification and dissemination process for technology tools and systems that facilitate cognitively-based assessments in schools.
3:3:2: Design and implement pilot projects to explore technology-based assessment models that tightly integrate curricula, instruction, and assessment. *(p. 82, 83)*	**3:3:2:a:** Describe the processes of designing the pilot program. **3:3:2:b:** Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects. **3:3:2:c:** Document the projects' strategies for Integrating curricula, instruction, and assessment into schools.
3:3:3: Expand the use of Interactive Achievement. *(p. 19)*	**3:3:3:a:** Identify content areas for future use. **3:3:3:b:** Determine the number of teacher-created assessments over a defined time period.
3:3:4: Provide training on PLATO to provide teachers opportunities to navigate around the program, make assignments, edit curriculum, access reports, and time for exploration. *(p. 19)*	**3:3:4:a:** Survey teachers on strengths and weaknesses of training session. **3:3:4:b:** Compile number of PLATO courses created and used by trained teachers.

3:3:5: Provide training for secondary reading, and identified English and Special Education teachers in the use and promotion of Lexia. *(Lexia has since been abandoned and replaced by Scholastic Reading)*	**3:3:5:** Survey attendees on strengths and weaknesses of training session. *(Lexia has since been abandoned and replaced by Scholastic Reading)*

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 understanding.**

Objective 4:1: Provide resources and support to ensure that every student has access to a personal computing device.

Strategies	Evaluation
4:1:1: Establish a computer hardware replacement/maintenance budget that isn't dependent on outside funding sources. *(p. 8)*	**4:1:1:** Review yearly division operating budget to determine if replacement/maintenance budget is adequate to maintain the GTSI corporation technology life-management cycle.
4:1:2: Provide tools that extend students' capabilities, can be customized to meet individual needs and preferences, and support learning. *(p. 14, 16)*	**4:1:2:** Determine the frequencies of personal computing device distribution, specifically (a) how personal computing devices are customized and (b) how the options for customization support learning.
4:1:3: Provide opportunities for students to learn and apply ICT (Information and Computer Technology) skills in local and community settings using a variety of authentic tools. *(This was part of the Title IID funds, which were eliminated at the Federal level.)*	**4:1:3:** Document the programs designed to teach students about ICT skills, and the extent to which the State provides students with opportunities to learn and apply ICT. *(This was part of the Title IID funds, which were eliminated at the Federal level.)*
4:1:4: Ensure student access to Internet-connected computers by maintaining a 2:1 student/computer ratio and the utilization of mobile technologies. *(p. 8)*	**4:1:4:a:** Tabulate the number of Internet-connected computers and mobile technology devices. **4:1:4:b:** Describe MCPS access policies and document MCPS "student use" records.
4:1:5: Utilize each school's "Site-Based Technology Committee" in order to help secure and effectively integrate instructional technology. *(p. 6)*	**4:1:5:** Describe the school's procurement procedures for planning for the instructional use and integration of technology and track its actual use by students and staff.
4:1:6: Implement a standard "21st Century" classroom model and a process for implementation. *(p. 14)*	**4:1:6:** Quantify MCPS budgetary support of 21st Century Classroom Initiative

Objective 4:2: Provide technical and pedagogical support to ensure that students, teachers, and administrators can effectively access and use technology tools.

Strategies	Evaluation
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. *(p. 13)*	**4:2:1:a:** Describe the types, scope/extent, and accessibility of the professional development offered and how it assists educators in evaluating and integrating technology tools in ways that benefit student learning, and the State's role in providing professional development opportunities **4:2:1:b:** Note the professional development program attendance.
4:2:2: Provide ongoing just-in-time support to assist teachers in effectively integrating a variety of technology-based tools into teaching and learning. *(p. 10)*	**4:2:2:a:** Maintain records of the types of ongoing and just-in-time support. **4:2:2:b:** Survey staff to determine how effectively they assist in ways that benefit student learning.
4:2:3: Provide timely and effective support to ensure that all tools and the network that supports them are installed and maintained properly. *(p. 20, 85)*	**4:2:3:a:** Describe the types of technical support available and the extent to which it is timely and effective with regard to technology installation and maintenance. **4:2:3:b:** Maintain a record of technical support requests and the response time for each request.
4:2:4: Provide Watershed Database training to science teachers. *(p. 18)*	**4:2:4:** Survey teachers to evaluate the effectiveness of the training.
4:2:5: Provide Chemoventory training session for teachers and staff. *(p. 23)*	**4:2:5:** Survey teachers and staff to determine the effectiveness of the training.
4:2:6: Establish a central repository for managing courses with instructional resources with web-based documentation. *(p. 16, 21)*	**4:2:6:** Determine where and how teachers access instructional resources and maintain a running record of the number of times it is accessed.
4:2:7: Increase the availability and access of SMART Boards for MCPS teachers. *(p. 15)*	**4:2:7:a:** Tabulate the exact number of SmartBoards by strand, school site, grade level, and classroom. **4:2:7:b:** Provide SMART Board/SMART Notebook software training and survey teachers and staff to evaluate its effectiveness.

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.

Strategies	Evaluation
4:3:1: Identify and disseminate information about new and emerging technologies. (*p. 17, 79)* • Technology newsletters • Technology department webpage • Listserv updates	**4:3:1:a:** Describe methods of identifying and disseminating information about new and emerging technologies. **4:3:1:b:** Maintain a distribution record of information sent to teachers and staff.
4:3:2: Design and implement pilot projects to evaluate a variety of personal computing devices such as iPads. *(p. 17)*	**4:3:2:a:** Document the processes of designing and implementing the pilot projects. **4:3:2:b:** Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects and the methods for evaluating the personal computing devices. **4:3:2:c:** Design an evaluation instrument for students and teachers to assess the effectiveness of the pilot projects.
4:3:3: Continue to implement the "Technology Lifecycle Model" to ensure that MCPS instructional needs are being met and technology stays current. *(p. 17)*	**4:3:3:a:** Document how MCPS effectively utilizes the "Technology Lifecycle Model." **4:3:3:b:** Inventory existing technology and describe how it has achieved its original goal(s). **4:3:3:c:** Maintain records that reflect the collaboration of curriculum supervisors and instructional technology staff in the evaluation of instructional software and applications. **4:3:3:d:** Entry Cycle will be developed to evaluate new technologies for purchase.
4:3:4: Provide training for Guidance Counselors in the identification of successful online learners including characteristics and self-assessment rubrics. *(p. 24)*	**4:3:4:** Survey Guidance Counselors who complete the training to determine strengths and weaknesses of the training and to plan or follow-up.
4:3:5: Expand use of Interactive Achievement by clarifying the administration of the program to prepare schools for benchmark testing, training teachers in the use of formative assessments, promoting teacher created assessments, and testing in other content areas in addition to English and math. *(p.20)*	**4:3:5:a:** Describe administration procedures to teachers and administrators. **4:3:5:b:** Maintain records of the number of teacher-created assessments over a defined time period and compare to previous data. **4:3:5:c:** Identify content areas for future use.
4:3:6: Create, train staff in the use of, and maintain an up-to-date inventory of software used throughout the Division.	**4:3:6:a:** Describe process for entering information and training for users of the inventory application. **4:3:6:b:** Conduct a survey to determine user satisfaction. **4:3:6:c:** Make revisions as necessary.

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.

Strategies	Evaluation
5:1:1: Model the use of data to inform strategic plans and purchases. • Develop a comprehensive SIS training program by analyzing employee processes and tasks, determining and organizing training content, selecting appropriate delivery methods, and implementing training • Provide web-based help documents for Star-Student *(p. 23)*	**5:1:1:a:** Define how the division uses data to inform strategic plans and purchases. **5:1:1:b:** Survey attendees on the strengths and weaknesses of training **5:1:1:d:** Analyze frequency of help document access
5:1:2: Conduct an annual survey and provide local education agencies with an annual statewide technology status report. *(p. 22)*	**5:1:2:a:** Document when, where, and how the survey is conducted. **5:1:2:b:** Record the dissemination of survey results.
5:1:3: Expand the use of ERO for tracking MCPS staff recertification by providing training that targets school administrators and Human Resource staff. *(p. 21, 22)*	**5:1:3:** Assess the number of school administrators and HR staff that use ERO to track employee recertification.
5:1:4: Expand use of Star_Student by making student data available to MCPS parent(s)/guardian(s) • Assess parent training needs • Secure parent access • Provide web-based documentation *(p. 23)*	**5:1:4:** Analyze parent(s)/guardian(s) surveys to determine training needs **5:1:4:b:** Record the frequency of Parent-Portal access to student data **5:1:4:c:** Record the frequency of web-based help documentation access
5:1:5: Expand the use of Pearson's PowerSchool by making individual student data accessible to MCPS students. *(p. 23)*	**5:1:5:a:** Analyze student(s) to surveys to determine training needs **5:1:4:b:** Record the frequency of Student_Portal access to student data **5:1:4:c:** Record the frequency of web-based help documentation access
5:1:6: Secure a data warehouse for safe storage and quick retrieval of data. *(p. 23)*	**5:1:6:** Describe the data warehouse.

Objective 5:2: Provide support to help teachers disaggregate, interpret, and use data to plan, improve, and differentiate instruction.

Strategies	Evaluation
5:2:1: Provide training and support to help stakeholders interpret data. • Interactive Achievement • Benchmark Testing • PLATO Reports *(p. 20, 23)*	**5:2:1:a:** Cite the types, scope/extent, and accessibility of the professional development offered. **5:2:1:b:** Survey stakeholders to determine strengths and weaknesses of training and make necessary revisions.
5:2:2: Identify and disseminate resources to assist ITRT in training teachers to disaggregate, interpret, and use data for instructional improvement. • Provide training for secondary reading teachers, English teachers, and Special Education teachers to promote and train on the Lexia program. • Provide science teachers with Watershed Database training on how to interpret the data collected and used to promote student success. • Provide training to teachers on PLATO with emphasis on site navigation, assignments, curriculum, and accessing reports. *(p. 18, 20)*	**5:2:2:a:** Describe the types of resources disseminated and the process by which they are provided. **5:2:2:b:** Document how these resources help ITRT use student achievement data to inform teachers about ways to improve instructional technology to enhance student learning. **5:2:2:c:** Survey attendees on strengths and weaknesses of training session. **5:2:2:d:** Compile number of PLATO classes created and used by trained teachers and compare to previous data.
5:2:3: Provide training and support to help ITRT assist teachers in using technology effectively to address data-supported needs. • Interactive Achievement • Benchmark Testing • PLATO Reporting *(p. 19, 20)*	**5:2:3:a:** Describe how professional development enables ITRT to use student achievement data to help teachers use technology in ways that optimize student learning. **5:2:3:b:** Maintain records that indicate the frequency of ITRTs assistance in helping teachers use student achievement data to optimize student learning.

Objective 5:3: Promote the use of technology to inform the design and implementation of next-generation standardized assessments.

Strategies	Evaluation
5:3:1: Design and implement pilot projects that support technology-based assessments, including simulations and game environments, innovative delivery platforms, and multiple ways for students to demonstrate understanding. *(p. 17, 82)*	***5:3:1:a:*** Describe the processes of designing the pilot programs, the number, types, locations, and scope/extent (breadth/depth) of the projects, and the technology-based assessments that are developed. ***5:3:1:b:*** Maintain records of pilot projects designed and implemented in a given time frame. ***5:3:1:c:*** Survey students and teachers on the effectiveness of the pilot projects.
5:3:2: Expand the use of Interactive Achievement by promoting teacher created assessments and testing in other content areas in addition to English and math. *(p. 20)*	***5:3:1:a:*** Determine the number of teacher-created assessments over a defined time period. ***5:3:1:b:*** Identify content areas for future use.
5:3:3: Establish a central repository for managing courses with instructional resources with web-based documentation. *(p. 21)*	***5:3:3:*** List where and how teachers access instructional resources.

Appendix I:
Timetable and Budget for Goals, Objective, Strategies, and Measures

Funding Source	2014-2015
State Grant (VPSA)	$715,130
Telecommunications	$314,677
Software Contracts	$275,553
Technology Maintenance	$115,674
Copier Lease	$239,643
Technology Replacement	$57,772
New Technology	$131,651
21st Classroom CIP	$500,000
Instructional Technology	$45,564
TOTAL	$2,395,664

Strategies and Measures	Timetable	Budget Source
1:1:1:	Ongoing	NA
1:1:2:	Ongoing	NA
1:1:3:	Ongoing	To be established
1:1:4:	Ongoing	Shift from existing sources
1:1:5:	Ongoing	NA
1:1:6:	Ongoing	NA
1:1:7:	Ongoing	NA
1:1:8:	Ongoing	NA
1:1:9:	Ongoing	NA
1:1:10:	Ongoing	NA
1:2:1:	2015-2016 School Year	School Board FY Budget
1:2:2:	Ongoing	School Board CIP Funds
1:2:3:	2015-2017 School Years	School Board CIP Funds
1:2:4:	2015-2017 School Years	School Board FY Budget
1:2:5:	2015-2017 School Years	School Board FY Budget
1:2:6:	2015-2017 School Years	School Board FY Budget
1:2:7:	2015-2017 School Years	State VPSA Grant
1:2:8:	Ongoing	School Board FY Budget
1:2:9:	Ongoing	State SOQ basic aide
1:2:10:	Ongoing	State SOQ basic aide
1:2:11:	2015-2017 School Years	State VPSA Grant
1:2:12:	ongoing	School Board FY Budget
1:2:13:	ongoing	School Board FY Budget
1:2:14:	2015-2016 School Years	School Board FY Budget
1:2:15:	2015-2017 School Years	School Board FY Budget

1:2:16:	Ongoing	NA
1:2:17:	Ongoing	NA
1:2:18:	2015	School Board FY Budget
1:3:1:	Ongoing	NA
1:3:2:	Ongoing	NA
1:3:3:	Ongoing	NA
1:3:4:	Ongoing	NA
1:3:5:	Ongoing	ITRT program
1:3:6:	Ongoing	NA
1:3:7:	Ongoing	Grant funds
2:1:1:	Ongoing	ITRT program
2:1:2:	Ongoing	ITRT program
2:1:3:	Ongoing	ITRT program
2:1:4:	Ongoing	ITRT program
2:2:1:	2016-2017 School Years	Curriculum Budget
2:2:2:	Discontinued Title IID	Discontinued Title IID
2:2:3:	Ongoing	NA
2:2:4:	Ongoing	NA
2:2:5:	Ongoing	NA
2:3:1:	Ongoing	ITRT program
2:3:2:	Ongoing	ITRT program
2:3:3:	Ongoing	ITRT program
2:3:4:	Ongoing	ITRT program
2:3:5:	Ongoing	IT Budget
3:1:1:	Ongoing	ITRT program
3:1:2:	Ongoing	ITRT program
3:1:3:	Discontinued Title IID	Discontinued Title IID
3:2:1:	Discontinued Title IID	Discontinued Title IID
3:2:2:	Discontinued Title IID	Discontinued Title IID 2012-2016 School Years
3:2:3:	Discontinued Title IID	Discontinued Title IID 2012-2016 School Years
3:2:4:	Discontinued Title IID	Discontinued Title IID 2011-2016 School Years
3:3:1:	Ongoing	ITRT program
3:3:2:	Ongoing	ITRT program
3:3:3:	2015-2016 School Years	ITRT program
3:3:4:	2015-2016 School Years	ITRT program
4:1:1:	2015-2017 School Years	ITRT program
4:1:2:	Ongoing	ITRT program
4:1:3:	Discontinued Title IID	Discontinued Title IID
4:1:4:	2012-2016 School Years	State VPSA Grant
4:1:5:	Ongoing	NA
4:1:6:	2015-2016 School Year	Vendor Donations
4:2:1:	Ongoing	ITRT program
4:2:2:	Ongoing	ITRT program
4:2:3:	Ongoing	School Board FY Budget
4:2:4:	2015-2016 School Year	ITRT program
4:2:5:	Ongoing	ITRT program
4:2:6:	Ongoing	ITRT program
4:2:7:	2016	School Board – 21st Century Project
4:3:1:	2015-2017	NA

4:3:2:	Ongoing	Grant Funds
4:3:3:	Ongoing	NA
4:3:4:	2015-2016 School Year	NA
4:3:5:	Ongoing	NA
4:3:6:	Ongoing	NA
5:1:1:	Ongoing	NA
5:1:2:	Ongoing	NA
5:1:3:	Ongoing	NA
5:1:4:	Ongoing	NA
5:1:5:	Ongoing	NA
5:1:6:	Ongoing	Curriculum Budget
5:2:1:	Ongoing	Curriculum Budget
5:2:2:	Ongoing	Curriculum Budget
5:2:3:	Ongoing	Curriculum Budget
5:2:4:	Discontinued Title IID	Discontinued Title IID
5:2:5:	Discontinued Title IID	Discontinued Title IID
5:2:6:	Discontinued Title IID	Discontinued Title IID
5:3:1:	Ongoing	Curriculum Budget
5:3:2:	Ongoing	Curriculum Budget
5:3:3:	Ongoing	Curriculum Budget

Appendix II:
Children's Internet Protection Act (CIPA)
Compliance Statement for MCPS
And Acceptable Use Policy

CIPA

Montgomery County Public Schools (MCPS) runs a private network for students, teachers, and staff with a secure connection to the Internet. Network security is maintained through the combined use of an Internet filtering proxy server, a firewall, staff guidelines and a student acceptable use policy. The following information demonstrates that Montgomery County Public Schools is in compliance with CIPA and 22.1-70.2 of the Code of Virginia.

The MCPS firewall was installed in December of 1998. The firewall prevents unauthorized intrusion and access to school system resources by producing a physical barrier between the MCPS private network and the Internet. The firewall also serves to authenticate outbound traffic from the MCPS private network to ensure that it is both appropriate traffic and has passed through the filtering proxy server.

The Internet filtering proxy server was deployed in October of 1997. This filter prevents access to harmful and illegal materials by users of the MCPS network. The server is updated dynamically by the product provider to ensure that it continues to stay current on materials that must be blocked to protect minors. The filtering software package enables the staff of MCPS to track and monitor online student activities. The software also filters and controls student access of electronic mail, chat rooms, newsgroups and other potentially harmful forms of electronic communication.

Staff Guidelines for the use of Instructional Technology were adopted in public session by the MCPS School Board in June of 1998. These guidelines establish procedures that protect the MCPS faculty and staff from harmful materials and practices that may result from the use of technology in the work place.

The MCPS School Board in open session first adopted an Acceptable Use Policy in October of 1994. The Board has since publicly acted to revise its Acceptable Use Policy in June of 1998 and June of 2001. The MCPS Acceptable Use Policy covers topics on student use of technology that include:

- Accessing of obscene or inappropriate materials.
- Student use of obscenity or profanity on a computer or network.
- Restrictions on students regarding the dissemination of personal information
- Unlawful student activities and conduct on the Internet.

As of February of 2000 the MCPS Acceptable Use Policy also includes a section on student electronic mail. Student violations of the Acceptable Use Policy are subject to discipline procedures under the MCPS student code of conduct. The full version of the MCPS Acceptable Use Policy can be found at ://www.mcps.org/admin/stuserv/k-5.pdf Or ://www.mcps.org/admin/stuserv/6-12.pdf .

Acceptable Use Policy

POLICY 6-3.13 TECHNOLOGY PROGRAMS

The responsible use of computers and computer networks is a powerful tool in support of the instructional program. The Montgomery County Public Schools' computer network is a wide-area network linking the schools and the administrative office to the Internet.

Liability

The School Board makes no warranties for the computer system it provides. The School Board shall not be responsible for any damages to the user from use of the computer system including loss of data, non-delivery or missed delivery of information, or service interruptions. The school division shall not be responsible for the accuracy or quality of information obtained through the computer system. The user agrees to indemnify the School Board for any losses, costs or damages incurred by the School Board relating to or arising out of any violation of this policy. MCPS technology staff will not repair, configure, or be responsible for personal equipment of staff members.

Internet Privacy Statement – Montgomery County Public Schools

The Montgomery County School Board maintains and operates a Web site for the dissemination of information about the school division. The School Board does not collect any information from persons who access its Web site, including personally identifiable information. The School Board Web site does not automatically place a computer file - commonly known as a "cookie" - on any person's computer who accesses the Web site.

Acceptable Internet Use and Internet Safety Policy

Generally the Montgomery County School Board adopts this Acceptable Use Policy, which outlines appropriate uses, ethics and protocol for the School Board's computer network. Every two years, the School Board shall review, and amend if necessary, and approve the school division's Acceptable Use Policy. The division superintendent or designee shall post the Acceptable Use Policy on the division website. The school division shall certify compliance with the requirements of Virginia Code Section 22.1-70.2 annually to the Virginia Department of Education.

1. The division superintendent or his/her designee shall select and operate technology that protects against, filters or blocks access through school division computers to visual depictions that are –

   a. child pornography, as set out in Virginia Code § 18.2-374.1:1 or as defined in 18 U.S.C. § 2256;
   b. obscenity, as defined in Virginia Code § 18.2-372 or 18 U.S.C. § 1460; and
   c. material that Montgomery County Public Schools deems to be harmful to juveniles, as defined in Virginia Code § 18.2-390, material that is harmful to minors, as defined in 47 U.S.C. § 254(h) (7) (G), and material that is otherwise inappropriate for minors.

2. The technology protection measure shall be utilized and enforced during any use of the division's computers by minors.
3. The school administration shall monitor online activities of minors.
4. The division superintendent or his/her designee shall select and operate technology and take administrative measures to protect the safety and security of minors when using electronic mail, chat rooms, and other forms of direct electronic communications.
5. The division superintendent or his/her designee shall ensure that the Montgomery County Public Schools include a component on Internet safety for students that is integrated in the division's instructional program and that is consistent with the guidelines for instructional programs related to Internet Safety issued by the Superintendent of Public Instruction.

The failure of any student, teacher or administrator to follow the terms of this Policy may result in the loss of Montgomery Public Schools' computer network privileges, disciplinary action and/or appropriate legal action.

ACCEPTABLE USE AND INTERNET SAFETY POLICY
Staff

1. MCPS staff shall use the division's computer equipment and communications services solely for educational purposes.
2. MCPS staff network account owners are responsible for all activities under this account, so staff shall not share network passwords.
3. MCPS staff shall not use the division's computer equipment and communications services for sending, receiving, viewing or downloading inappropriate and/or illegal material via the Internet and World Wide Web.
4. MCPS staff shall not use the division's computer equipment and communications services as part of any illegal activity defined as a violation of any local, state, or federal laws.
5. MCPS staff shall monitor online activities of minors.
6. MCPS staff shall report any instances of cyberbullying, cyberthreats, inappropriate or illegal activity to school administrators.

7. MCPS staff shall not disclose, use, or disseminate confidential information regarding students.
8. MCPS staff shall require students to have a signed Acceptable Use Policy (AUP) before using computer.
9. MCPS staff shall not use computer for commercial, political, or entertainment purposes during the school day.
10. MCPS staff shall be held responsible and accountable for damage to district equipment or network as a result of improper or unauthorized usage.
11. MCPS staff may access the MCPS public, wireless network, but shall not install any devices on the MCPS private, wired network.
12. MCPS staff shall comply with all applicable copyright regulations.
13. MCPS staff shall comply with the retention of electronic public or student records as governed by the Virginia Public Records Act, Virginia Code § 42.1-76, *et seq.* Record retention schedules, which identify various documents and how long they must (or need to) be saved, may be accessed at the Virginia Library's website: www.lva.lib.va.us.
14. MCPS staff shall integrate Internet safety into their curriculum.

Failure to follow the terms of this Policy may result in the loss of Montgomery Public Schools' computer network privileges, disciplinary action and/or appropriate legal action.

ACCEPTABLE USE AND INTERNET SAFETY POLICY
Grades K-5

With the permission of your parent or guardian, Montgomery County Public Schools offers you an opportunity to use the Internet and computer systems at school. The term computer system includes hardware, software, data, communication lines and devices, terminals, printers, CD-ROM devices, tape drives, servers, mainframe and personal computers, the Internet and other internal or external networks. We expect you to use the Internet and computer based technology while in our building only for educational purposes. This use is a privilege, *not a right*, and we may discipline you or take away your right to use the Internet and computer technology at school if you misuse this privilege. You are responsible for your own actions while you are on the Internet and are also accountable for any online activities that occur by others because you have allowed them to use your account. The division's computer system is not a public forum. Any communications or materials used on the computer system, including electronic mail or other files deleted from a user's account, may be monitored or read by school officials.

1. I will read the rules for using the Internet that are given below and will ask an adult at my school if I do not understand what any of them mean. I also know that if I do not use computers and equipment in the right way, my teacher or Principal may need to punish me. In fact, I may not be allowed to use computers and equipment again at school.
2. I will only use computers and equipment in the manner for which they are made. I know that my teacher and my Principal want me to use the Internet to learn more about the subjects I am studying in my classroom.

I will not use the Internet for any other reason. For example, I will not search for a comic book site when I am supposed to be looking for something in science.

3. I understand that I am responsible or liable for any damages that I cause while using technology.
4. I will be polite to other people when writing to them (or talking with them) while I am on the Internet. I will not use curse words or any language that my teacher or parent would not want me to use in my classroom.
5. I will never give my name, my home address, any personal information about me or my family, or my telephone number to anyone I write to or communicate with on the Internet. I know that almost anyone I contact is a stranger to me, and that I don't share personal information with strangers no matter how nice they seem to be.
6. I will not cyberbully. "Cyberbully" means any threats, harassment, or intimidation of another person using the computer. I will tell an adult if I see any cyberbullying, cyberthreats, or inappropriate activity.
7. I understand that sometimes I may see a site on the Internet that has pictures or words that my teacher or parents would not want me to see. I will not try to find those sites and, if I come across one of them by accident, I will leave it as soon as I can. For example, suppose I am searching for a type of animal and find a picture that only adults should see. I quickly use my forward or backward keys to take me to another site. I will not continue to look at the site with the bad picture and will not show it to others around me. I also will not print it out or save the picture.
8. I will not use the words or pictures I see on an Internet site without giving credit to the person who owns the site. For example, I will not copy information from the Internet and hand it in to my teacher as my own work.
9. I will never give out private information about others or myself; including last name, address, phone numbers, or school information.
10. I will tell an adult right away if anything comes up on the screen that makes me feel uncomfortable.

I agree to follow the rules listed above. If I do not, my technology privileges may be taken away.

Student Name: _____

Student Signature: _____

Parent Name: _____

Parent Signature: _____

Date_____

ACCEPTABLE USE AND INTERNET SAFETY POLICY
Grades 6-12

With the permission of your parent or guardian, Montgomery County Public Schools offers you the opportunity to use the Division's network which allows access to the Internet, as well as a variety of electronic devices. We expect you to use the Internet and computer based technology while at school for educational purposes. This use is a privilege, not a right, and we may discipline you or take away your right to use the Internet and computer technology at school if you misuse this privilege. This use is a privilege, not a right, and we may discipline you or take away your right to use the Internet and computer technology at school if you misuse this privilege. You are responsible for your own actions while you are on the Internet and are also accountable for any online activities that occur by others if you allow them to use your account.

While MCPS does not provide email accounts for students, students may create an account and use it during school hours for educational purposes. Any communication including electronic mail or other electronic files, is subject to the Student Code of Conduct and the Acceptable Use and Internet Safety Policy, and may be monitored or read by school officials. User shall be held personally liable for the content of any electronic message they create. Downloading any file attached to an electronic message is prohibited unless the user is certain of that message's authenticity and the nature of the file.

While using technology as a student in Montgomery County Public Schools:

1. I will only use the technology and equipment in the manner for which it was designed. I understand that I may be held responsible for any or all damage incurred as a result of my negligent or inappropriate behavior.
2. While online, I will not use language, which may be offensive to other users. I will treat others with respect. The written and verbal messages I send while on the Internet will not contain profanity, obscene comments, sexually explicit material, or expressions of bigotry, racism, or hatred.
3. I will not cyberbully. “Cyberbully” means any threats, harassment, or intimidation of another person using the computer. I will tell an adult if I see any cyberbullying, cyberthreats, or inappropriate activity.
4. I will not place unlawful information on the Internet, nor will I use the Internet illegally in any way that violates federal, state, or local laws or statutes. I will never falsify my identity while using the Internet.
5. I will not use the Internet for non-school related activities.

6. I will not engage in Internet activities that cause congestion on the MCPS network.
7. I will not use the Internet to buy or sell, or to attempt to buy or sell any service or product.
8. I will not change any computer file that does not belong to me.
9. I will not use copyrighted materials or software from the Internet without permission of the author. I will cite the source where appropriate.
10. I will never knowingly give my password to others, nor will I use another person's password.
11. I will never use the Internet to send or obtain pornographic or inappropriate material or files.
12. Except for the usual information contained in the headers of my electronic mail, I will never give out personal information such as name, address, phone number, or gender.
13. I will never knowingly circumvent, or try to circumvent, security measures on either Montgomery County Public Schools' computers or on computers at any remote site.
14. I will never attempt to gain unlawful access to another person's or organization's resources, programs, or data.
15. I will not make, or attempt to make, any malicious attempt to harm or destroy data of another user on the Internet, including the uploading, downloading, or creation of computer viruses.
16. I understand that the school system is not responsible or liable for any harm, damages or charges that result from my use of the system's technology, including loss of data, interruption of services, corruption of files or programs, purchases, hacking or other violations of this Acceptable Use Policy.
17. I will report any violations of this Acceptable Use Policy that I have knowledge of to my teacher or principal.

Student's Agreement

I have read the Acceptable Use Policy for Internet Access, as written above, and understand fully and agree to follow the principles and guidelines it contains. If I did not understand the meaning of part of it, I asked an adult to explain it to me. I agree to follow these rules at all times when at school.

Student Signature:

_____

Parent's Agreement

As the parent or guardian of this student, I have read the Acceptable Use Policy for Internet Access and Computer based Technology as written above. I understand that computer access at school for students of Montgomery County Public Schools is provided for educational purposes only. I understand that employees of the school system will make every reasonable effort to restrict access to all controversial material on the Internet, but I will not hold them responsible for materials my son or daughter acquires or sees as a result of the use of the Internet from school facilities. By signing this document and/or the student handbook in which this policy is contained, I give my permission to Montgomery County Public Schools for my son or daughter to use computer equipment and the Internet while on school property.

Parent Signature:

_____

If I do not consent to the above rules, or I do not wish for my child to access computer equipment and the Internet, I have indicated my desire on the signature page to be contacted by the school to arrange for alternative instruction for my child.

Parent Signature:

_____

Montgomery County Public Schools reflects the general trend of society towards an information based technological culture. Goal IV of the instructional Vision Statement for MCPS states, "All students will understand and use the latest technologies and information sources." Therefore, computer based instruction is a key element of the MCPS curriculum and students as a rule will encounter it as part of the normal classroom.

Guidelines for Student E-mail

Internet, Web-based, student E-mail accounts are made available to Montgomery County Public Schools' students for instructional reasons. Student access to E-mail is a privilege with a corresponding degree of responsibility for the user. As an instructional tool, student E-mail accounts are monitored and controlled by the classroom teacher.

As administrators of the student E-mail system teachers will:

1. Enable and disable student accounts as needed for instructional reasons.
2. Access and read student E-mail for the purpose of monitoring appropriate student use.
3. Supervise student use of the E-mail system and report incidents to the appropriate building administrator for action.
4. Maintain a file of their student's signed consent forms.
5. Adhere to the MCPS Staff Guidelines for the use of Instructional Technology.

Student responsibilities include:

1. Students should never put personal information in their E-mail messages (name, phone number, age, home address).
2. Students must not use E-mail in an inappropriate or offensive manner.
3. Students are responsible for returning a signed parental consent form before E-mail accounts will be issued.
4. Students will adhere to the MCPS Acceptable Use Policy for Computer Based Technology.

The Student e-mail system has been configured with the following constraints:

1. To conserve disk space E-mail messages will automatically be purged on approximately a monthly basis and Student E-mail accounts will be of a finite size. Students should save important messages as text or word processing documents to their desired storage location.
2. To prevent the spread of computer viruses the ability of the system to send and receive attachments will be controlled.

PARENTAL AUTHORIZATION FOR SCHOOL EMAIL

With the consent of your parent/guardian, you will be provided an E-mail account for instructional use. This is a privilege extended to you to aid your learning and it may be withdrawn or modified by your teacher if it is misused. By signing this

document to use school provided E-mail or a school computer you become responsible for your actions with these tools and are accountable for them.

This E-mail account is provided as a support to the instructional process and consequently any and all messages are open for review by the assigning instructor. In maintaining and securing the system, technology support personnel may also have access to the message traffic.

Follow these guidelines and apply common sense to evaluate your actions in using the system.

1. Messages will not contain profanity, obscene comments or sexually explicit materials.
2. Messages will not contain racist, sexist, religious or generation derogatory content. Respect for members of the school and general community is expected and should be expressed.
3. User identity will be accurately reflected in all message traffic.
4. No virus, program, or addition will be introduced into the system, which alters its operation, destroys or damages data or renames or relocates files.
5. Passwords, or other access coeds or identifiers, are not to be shared by student users. No student is authorized to use any other person's PID, password or E-mail account.
6. Overall message volume or routing should not absorb a disproportionate amount of E-mail system resources.

ACKNOWLEDGMENT

_____ _____

Print first and last name Signature Date

CONSENT

As parent/guardian I consent to this student being assigned an E-mail account.

_____

Signature Date

As parent/guardian I do not consent and do not want this student to have an E-mail account.

_____

Signature Date

Guidelines for Employee E-mail

The School Board provides computer-based electronic information services for the sole purpose of carrying out the mission of the school division. The purpose of this section is to define the appropriate use of the Montgomery County Public Schools electronic mail system. However, this section does not enumerate all possible acceptable and unacceptable uses. This policy applies to all persons who have been provided an MCPS e-mail account, including, but not limited to, MCPS employees. By using the MCPS e-mail system, users agree to do so only in compliance with this Policy and all applicable state and federal laws, including laws related to copyright and obscenity.

Appropriate Use

Access to the MCPS e-mail system shall be: (1) for educational purposes that are consistent with School Board objectives and (2) for legitimate school business. Responsible use of electronic communication requires discretion and professionalism. Users are solely and individually responsible for all communication transmitted via their MCPS e-mail accounts and shall not:

(1) forge, intercept or interfere with electronic mail messages;
(2) use obscene, lewd, profane, threatening or disrespectful language;
(3) distribute personal information about others without their consent;
and/or
(4) distribute chain mail, solicitations, political statements, or religious messages.

When communicating via MCPS e-mail, users are expected to abide by generally accepted rules of etiquette.

Personal Use

The MCPS electronic communication systems are to be used for school system business purposes. Incidental personal use is permissible, so long as it does not:

(1) interfere with instruction;
(2) interfere with staff productivity;
(3) burden the school division with identifiable costs;
(4) preempt any school division activity or interfere with the efficient operation of the County's computing facilities or electronic mail services.

Privacy

As a matter of general practice, the MCPS administration will not regularly monitor e-mail messages. However, MCPS e-mail system users shall not have any expectation of privacy in anything that they create, store, send or receive on the MCPS e-mail system. The MCPS administration reserves the right without prior notice to access any e-mail message.

Management Practices

The individual user account of any employee shall be removed upon the employee's resignation or termination of employment.

On July 1 of each year, the MCPS technology department shall remove all e-mail messages from the system that are more than one year old.

E-mail Confidentiality

In general, e-mail messages from the MCPS e-mail system are public documents under applicable law and, therefore, are not confidential. Under the Virginia Freedom of Information Act, e-mail messages must be produced if a citizen requests them with reasonable specificity. The general public shall have access to MCPS e-mail messages as provided in Virginia Code § 2.2-3704.

E-mail messages that contain personally identifiable, non-directory information about an MCPS student or employee are confidential and may be exempt from public disclosure under Virginia Code §§ 2.2-3704(G) and 2.2-3705.4(1). In addition, e-mail messages that contain personally identifiable information about a student are covered by the Family Educational Rights and Privacy Act ("FERPA"), 20 U.S.C. §1232g, and only persons with a legitimate educational interest may have access to them without written prior informed parental consent. MCPS employees that use the e-mail system to convey information to individuals that do not have a legitimate educational interest may be in violation of FERPA.

E-mail Record Retention

The School Board recognizes that e-mail messages may qualify as public records or student records under applicable law, and therefore are governed by the Virginia Public Records Act, Virginia Code § 42.1-76, *et seq.* Record retention schedules, which identify various documents and how long they must (or need to) be saved, may be accessed at the Virginia Library's website: www.lva.lib.va.us. The MCPS administration does archive messages from the division's e-mail server. However, it is the responsibility of the originator of the email record to also archive records they generate when such emails represent a student record. It is the responsibility of each individual MCPS employee to comply with the Library of Virginia's schedules for the retention of electronic messages, based on the categories of documents for which the e-mail messages qualify. For example, in cases where e-mail messages are relevant to a student's cumulative record, the message must be printed and retained for five years.

LEGAL REFERENCE: Code of Virginia, 1950, as amended, §§2.2-3700, et seq., 2.2-3803, 18.2-372, 18.2-374.1:1, 18.2-390, 22.1-70.2; 42.1-76, et seq., 18 U.S.C. §§ 1460, 2256; 47 U.S.C. § 254.
Adopted: April 2004
Revised: September 2005, August 2006, August 2007, June 2010, October 2010

Appendix III: Internet Safety Program 2013-2014

The Internet has become a powerful tool for research and learning. MCPS is dedicated to providing the safest possible environment for teachers and students to use the Internet to its fullest potential. As a result of Virginia's Department of Education (VDOE) initiative, MCPS is implementing a comprehensive program that integrates Internet Safety into all areas of study. The MCPS Internet Safety Program provides support and resources to teachers, administrators, and the community.

In developing an Internet Safety Program, MCPS staff:

- Developed a program for increasing community awareness of Internet safety. The program provides information of the positive uses of the Internet, the dangers that the Internet poses, tips on safe Internet use, and tips on how to talk with children about the dangers of the Internet.

- First delivered a presentation to the community at the Montgomery County Community Safety Forum in November of 2006. Since that time MCPS has presented to the PTA presidents of Montgomery County and at PTA meetings in various schools throughout Montgomery County.

- Created informational materials in the form of a CD and pamphlet that provide tips and resources for parents.

- Maintains a webpage devoted to Internet Safety. The Internet Safety webpage provides resources, tips, and lessons to help the community become safer Internet users.

To fulfill the commitment MCPS has made to keeping students safe while using the Internet, staff must:

- Continue to maintain and update lesson plans and resources
- Continue to maintain and update Website
- Continue to provide Community Outreach through public meetings
- Monitor and convey the latest information concerning Internet Safety
- Encourage and facilitate integration of Internet Safety into the regular curriculum
- Promote the safe and responsible use of social media.
  (2:3:2, 2:3:2, 2:3:3, 2:3:4, 2:3:5)

Appendix IV:
Current Status / Needs Assessment

I. Computer Hardware

The Client Computer (laptop or PC that is utilized by an end user) is the foundation on which instructional technology is built. It is the primary gateway for accessing both local and Internet-based instructional delivery and is indispensable with regard to administrative functions. Therefore, the maintenance of an effective operating inventory is fundamental to the mission of a school system.

MCPS purchases only name brand Gartner Group 1 or 2 computers listed on State contract. This ensures quality equipment, under extended warranty, is purchased at a statewide-negotiated rate. "For the replacement of computers, school divisions—including administrative offices—should consider a replacement cycle of three years for both desktop and notebook computers. The cost of replacing computers should be included in a regular budget schedule." (VDOE, *Educational Technology Guidelines*)

MCPS Computer Inventory
Starting of Fiscal Year 2013

Site	1-2 Years	3-5 Years	5 Years	Total
AES	103	121	10	234
BES	56	68	2	126
CPS	23	69	52	144
CES	0	188	88	276
ELES	0	426	1	427
FBE	92	115	41	248
GLE	35	72	16	123
HAE	25	91	11	127
KES	1	204	6	211
MBES	18	117	42	177
PFE	103	345	0	448
AMS	34	111	61	206
BMS	75	241	139	455
CMS	40	195	156	391
SMS	49	101	21	171
AHS	456	13	0	469
BHS	480	69	0	549
CHS	100	355	119	574
EMHS	70	150	22	242
ISS	40	14	0	54
RIVENDELL	0	24	0	24
TECH DEPT	6	12	33	51

FACILITIES	3	2	8	13
WAREHOUSE		1	4	5
TRANSPORTATION	2	3	4	9
SBO	33	20	7	60
Total	1844	3127	843	5814

The vast majority of the computer inventory in MCPS was purchased under the Virginia Department of Education SOL Online Testing Initiative or with school construction bonds. "As part of the Web-based SOL Technology Initiative, each school must achieve a maximum client ratio of five students to one computer." (VDOE, Educational Technology Guidelines)

Student-to-Computer Ratio
2013-2014

Site	Computers	Students	Ratio
AES	234	516	2.21
BES	126	255	2.02
CPS	144	385	2.67
CES	276	339	1.23
EMES	427	466	1.09
FBE	248	463	1.87
GLE	123	279	2.27
HAE	127	220	1.73
KES	211	268	1.27
MBES	177	350	1.98
PFE	448	368	0.82
AMS	206	286	1.39
BMS	455	675	1.48
CMS	391	674	1.72
SMS	171	218	1.27
AHS	469	348	0.74
BHS	549	908	1.65
CHS	574	849	1.48
EMHS	242	255	1.05
ISS	54	55	1.02
RIV	24	20	0.83
TOTAL	5676	8197	1.44

As part of the 2010-2011 Budget deliberations, the Virginia legislature considered removing the bond funding for the State Technology Initiative. If this had come to fruition, MCPS would have had minimal dollars for the continued renewal of its computer inventory. Montgomery County Public Schools' dependence on the State Technology Initiative funds for its computer inventory replacement is a vulnerability that needs to be addressed.

II. Wide Area Network and Internet *(1:2:5)*

The telecommunications lines that comprise the MCPS Wide Area Network (WAN) are used to provide students and teachers with access to the Internet and all its services.

In 2010-11 the Director of Technology on behalf of the School System pursued a BTOP Grant (Broadband Telecommunications Opportunities Program) that enabled the Division to greatly increase its bandwidth by construction of a fiber optic infrastructure in conjunction with Citizens Telecommunications. As a result, the current status of the MCPS Wide Area Network for is as follows:

SCHOOL	WAN CIRCUIT	COST
Auburn Elementary	1 Gbps Fiber	$500
Auburn High	10 Gbps Fiber Connection to AES	$0
Auburn Middle	10 Gbps Fiber Connection to AES	$0
Belview Elementary	1 Gbps Fiber	$500
Blacksburg High	10 Gbps Fiber Connection to BMS	$0
Blacksburg Middle	1 Gbps Fiber	$500
Christiansburg Primary	1 Gbps Fiber	$500
Christiansburg Elementary	1 Gbps Fiber Connection To CPS	$0
Christiansburg High	1 Gbps Fiber Connection To Technology	$0
Christiansburg Middle	1 Gbps Fiber	$500
Eastern Montgomery High	1 Gbps Fiber Connection To EMES	$0
Eastern Montgomery Elementary	1 Gbps Fiber	$500
Falling Branch Elementary	1 Gbps Fiber	$500
Gilbert Linkous Elementary	1 Gbps Fiber	$500
Harding Avenue Elementary	1 Gbps Fiber	$500
Kipps Elementary	1 Gbps Fiber Connection To BMS	$0
Margaret Beeks Elementary	1 Gbps Fiber	$500
Prices Fork Elementary	1 Gbps Fiber	$500
School Board Office	1 Gbps Fiber	$500
Service Department	1 - PtoP DS1 (1.5 Mbps)	$347
Shawsville Middle	1 Gbps Fiber	$500
Detention Center	1 - PtoP DS1 (1.5 Mbps)	$347
Transportation	100 Mbps Fiber Connection To Service Dept.	$0
Warehouse	100 Mbps Fiber Connection To Service Dept.	$0
Independence	1 - PtoP DS1 (1.5 Mbps)	$0
Technology	1 Gbps fiber to Schools	$500
Internet Access	200 Mbps	$10,050
	Monthly Total	$17,744
	Annual Fee	$212,928

Current cost of operating the MCPS Wide Area Network:	$212,928
Projected cost for phones, cell phones and long distance:	$250,175
Total Telecommunications cost 2010-2011:	$463,103
MCPS Telecommunications Budget:	$293,695
Revenue Shortfall (E-Rate Dependency):	$169,408

The E-Rate program under the Federal Universal Service Administrative Company (USAC) requires schools to apply for projected services roughly eight months prior to the beginning of the funding year in which they will receive the services. Reimbursements under the program are made after the completion date of delivery of the services. All awards are subject to successful application and go through a rigorous review process by USAC.

The school system's private network is constructed behind two Cisco ASA 5510 firewalls. The firewalls provide security for the MCPS private network, perform Network Address Translation, and ensure that all Internet traffic is authenticated through the proxy server. These appliances are configured in a redundant setup, so the network will continue to operate if a device fails. All traffic to and from the schools pass through a Packeteer appliance that is used for protocol monitoring and prioritizing.

Continued attention will be devoted to search out and deploy new technologies to increase bandwidth. Only through this type of continued effort will MCPS be able to provide access to the ever-growing demand of web-based instructional opportunities.

III. Local Area Network

A. Network Servers

MCPS subscribes to Novell Netware through the School License Agreement (SLA) contract. Netware servers are distributed to the schools to provide application, file storage, and backup services. Additionally, the Division deploys other servers for instructional applications and services.

MCPS Server Inventory

2013-2014

Site File Servers	Virtual (Y/N)	CUP	NOS	Hard Drive	RAM
AES		2.5 GHz	Netware 6.5	600 GB	2 GB
BES		2.5 GHz	Netware 6.5	600 GB	2GB
CPS/CES		2.5 GHz	Netware 6.5	600 GB	2 GB
EMES		2.5 GHz	SUSE	600 GB	4 GB
FBE		2.5 GHz	Netware 6.5	600 GB	2 GB
GLE		2.5 GHz	Netware 6.5	600 GB	2 GB
HAE		2.5 GHz	Netware 6.5	600 GB	2 GB
MBES		2.5 GHz	Netware 6.5	600 GB	2 GB
PFE	Y	2.5 GHz	SUSE	600 GB	4 GB
KES	Y	2.5 GHz	SUSE	900 GB	4 GB
AMS	Y	2.5 GHz	SUSE	1.2 TB	4 GB
BMS/BHS	Y	2.5 GHz	SUSE	9.0 TB	4 GB
CMS		2.5 GHz	Netware 6.5	600 GB	4 GB
SMS		2.5 GHz	Netware 6.5	600 GB	2 GB
AHS	Y	2.5 GHz	SUSE	8.0 TB	4 GB
CHS	Y	2.5 GHz	SUSE	1.0 TB	4 GB
EMHS		2.5 GHz	Netware 6.5	600 GB	2 GB
OCMS		2.5 GHz	Netware 6.5	600 GB	2 GB
SBO		2.5 GHz	Netware 6.5	1.0 TB	2 GB
SD	Y	2.5 GHz	SUSE	600 GB	4 GB
District Novell		2.7 GHz	SUSE	2.0 TB	4 GB

Maintenance Servers	Virtual (Y/N)	CPU	NOS	Hard Drive	RAM
AES		1.6 GHz	Windows 2008	1.8 TB	4 GB
BES		3.0 GHz	Windows 2003	700 GB	1 GB
CPS/CES		2.8 GHz	Windows 2008	1.5 TB	4 GB
EMES		3.0 GHz	Windows 2003	1.2 TB	4 GB
FBE		3.0 GHz	Windows 2003	1.2 TB	4 GB
GLE		3.0 GHz	Windows 2008	1.8 TB	4 GB
HAE		3.0 GHz	Windows 2012	600 GB	4 GB
KES		2.0 GHz	Windows 2003	2.5 TB	4 GB
MBES		3.0 GHz	Windows 2003	600 GB	1 GB
PFE		3.0 GHz	Windows 2003	600 GB	4 GB
AMS		3.0 GHz	Windows 2008	500 GB	4 GB
BMS		2.0 GHz	Windows 2003	2.5 TB	1 GB
CMS		3.0 GHz	Windows 2003	1.1 TB	1 GB
SMS		3.2 GHz	Windows 2003	600 GB	2 GB
AHS	Y	3.2 GHz	Windows 2008	1.0 TB	8 GB
BHS	Y	3.2 GHz	Windows 2008	1.0 TB	8 GB
CHS		2.0 GHz	Windows 2003	1.6 TB	2 GB
EMHS		3.0 GHz	Windows 2003	1.0 TB	2 GB
SBO		2.8 GHz	Windows 2003	1.6 TB	2 GB

SD		2.8 GHz	Windows 2003	100 GB	1 GB
Tech		3.0 GHz	Windows 2008	2.0 TB	4 GB
Update Server	Y	3.1 GHz	Windows 2003	150 GB	1 GB
Backup Server	Y	3.0 GHz	Windows 2003	1.12 TB	1 GB

Operational Servers	**Virtual** (Y/N)	**CPU**	**NOS**	**Hard Drive**	**RAM**
WWW	Y	3.0 GHz	Windows 2003	232 GB	4 GB
GW Archive		2.8 GHz	Windows 2003	1.3 TB	4 GB
Student Email		3.0 GHz	Windows 2003	370 GB	4 GB
School Nutrition		3.4 GHz	Windows 2003	150 GB	2 GB
Point of Sale		3.0 GHz	Windows 2003	136 GB	4 GB
Transportation		3.4 GHz	Windows 2003	150 GB	2 GB
Subfinder Dialer		2.0 GHz	Windows 2003	150 GB	2 GB
Subfinder Web Server		2.0 GHz	Windows 2003	150 GB	2 GB
Inside DNS/Wins	Y	2.8 GHz	Windows 2008	60 GB	4 GB
Primary Outside DNS	Y	2.8 GHz	SUSE	30 GB	4 GB
Secondary Outside DNS	Y	2.8 GHz	SUSE	30 GB	4 GB
INet Filter Reporter	Y	3.4 GHz	Windows 2003	400 GB	4 GB
ASP	Y	2.8 GHz	Windows 2003	280 GB	2 GB
Star Student Database Server		2.0 GHz	Red Hat Enterprise Linux	1.2 TB	4 GB
Star Student Form Server		2.0 GHz	Red Hat Enterprise Linux	320 GB	4 GB
PowerSchool Database Server	Y	2.4 GHz Dual	Windows Server 2008 R2	1.6 TB	72 GB
PowerSchool Application Server 1	Y	2.67GHz Dual	Windows Server 2008 R2	60 GB	8 GB
PowerSchool Application Server 2	Y	3.3 GHz Dual	Windows Server 2008 R2	60 GB	8 GB
PowerSchool Application Server 3	Y	3.3 GHz Dual	Windows Server 2008 R2	60 GB	8 GB
PowerSchool Application Server 4	Y	3.3 GHz Dual	Windows Server 2008 R2	60 GB	8 GB
PowerSchool Test Environment Server	Y	2.0 GHz	Windows Server 2008 R2	465 GB	8 GB

District SASIxp		2.6 GHz	Windows Server 2003	40 GB	500 MB
Zone Integration Server	Y	3.0 GHz	Windows Server 2004	232 GB	1 GB
MUNIS Server		2.0 GHz	Windows Server 2008 R2	900 GB	18 GB
Terminal Server	Y	2.67 GHz	Windows Server 2003	20 GB	1 GB
Destiny Server		2.4 GHz	Windows Server 2008 R2	600 GB	8 GB
Moodle for Instruction	Y	2.67 GHz	Windows Server 2008 R2	500 GB	4 GB
Moodle for Professional Development	Y	2.67 GHz	Windows Server 2008 R2	850 GB	4 GB
Cando Server for CTE	Y	2.67 GHz	Ubuntu Linux	60 GB	2 GB
Badge/Security Server		2.67 GHz		500 GB	4 GB
Netmail Guardian Server 1 /SMTP Server	Y	2.67 GHz	SUSE Linux Enterprise 11	40 GB	3 GB
Netmail Guardian Server 2 /SMTP Server	Y	2.67 GHz	SUSE Linux Enterprise 12	40 GB	3 GB

Instructional Servers	**Virtual** (Y/N)	**CPU**	**NOS**	**Hard Drive**	**RAM**
Itest	Y	2.5 GHz	Windows 2003	65 GB	1 GB
Achievement	Y	2.5 GHz	Windows 2003	65 GB	1 GB
Backup Box	Y	2.8 GHz	Windows 2003	100 GB	1 GB
Moodle for Instruction	Y	2.67 GHz	Windows Server 2008 R2	500 GB	4 GB
Moodle for Professional Development	Y	2.67 GHz	Windows Server 2008 R2	850 GB	4 GB
600 Archive Weekly 1	Y	2.6 GHz	Windows 2008	150 GB	8 GB
600 Archive Weekly 2	Y	2.6 GHz	Windows 2008	150 GB	8 GB

The MCPS Technology Department has consolidated severs through Virtual Machine (VM) technology. This has produced savings by the reduction of the number of servers and provided greater equipment flexibility. VM machines and associated storage devices cost considerably more than a standard server while providing greater redundancy and fault tolerance.

B. Network Switches

Network switches in school buildings form the core for the Local Area Network (LAN). It is through these devices that students, teachers, and staff gain access to the Internet, network application, file sharing and storage. LAN cabling and switches dictate the access speed to vital instructional and administrative services.

Site	Switch Model	Cable Type	Backbone Speed	POE	# of Ports	Expansion Available	Wireless
AES	HP 5406ZL	Cat 5e	1 GB	Y	408	408	Full
BES	HP 5406ZL	Cat 6	1 GB	Y	232	48	Full
CPS	HP 5406ZL	Cat 5e	1 GB	Y	168	96	Full
CES	HP 5406ZL	Cat 6	1 GB	Y	272	144	Full
EMES	HP5406/5412	Cat 5e	1 GB	Y	304	120	Full
FBE	HP 5406ZL	Cat 5e	1 GB	Y	452	190	Full
GLE	HP5406/5412	Cat 5e	1 GB	Y	241	405	Full
HAE	HP 5406ZL	Cat 5e	1 GB	Y	176	2	Full
KES	HP 5406ZL	Cat 5e	1 GB	Y	300	232	Full
MBES	HP5406/5412	Cat 6	1 GB	Y	276	284	Full
PFE	HP5406/5412	Cat 6	1 GB	Y	890	202	Full
AMS	HP 4208	Cat 5e	100MB	N	308	188	Full
BMS	HP5406/5412	Cat 6	1 GB	Y	960	500	Full
CMS	HP5406/5412	Cat 6	1 GB	Y	904	528	Full
SMS	HP 4000M	Cat 5	100MB	N	312	5	Full
AHS	AL4800-E6	Cat 6	10 GB	Y	1440	200	Sat
BHS	AL4800-E6	Cat 6	10 GB	Y	2304	500	Sat
CHS	HP5406/5412	Cat 5e	1 GB	Y	944	552	Full
EMHS	HP 5406ZL	Cat 5e	1 GB	Y	504	456	Full
OCMS	HP 5406ZL	Cat 6	100MB	N	20	120	Full
SBO	HP 5406ZL	Cat 5e	1 GB	Y	272	288	Full
Tech	HP 5406ZL	Cat 6	1 GB	Y	364	56	Full
SD	HP 4000M	Cat 5e	10MB	N	48	22	None
Warehous	HP 4000M	Cat 5e	100MB	N	8	65	None
Trans	HP 4000M	Cat 5e	100MB	N	24	57	Area

IV. Miscellaneous Technology Systems

A. Security Cameras

Security Cameras are installed in all MCPS elementary and secondary schools. The ONssi NETDVMS software is installed on all servers to record video and Axis 210A/212PTZ cameras are installed at entry/exit and high traffic areas. The current status of security camera servers is as follows:

SECURITY CAMERA SERVERS

Site	CPU	NOS	Hard Drive	RAM
AES	2.4 GHz	Windows 2003	1.5 TB	4 GB
BES	2.5 GHz	Windows 2008	465 GB	4 GB
CES	2.4 GHz	Windows 2008	1 TB	4 GB
CPS	2.4 GHz	Windows 2008	700 GB	4 GB
FBE	2.4 GHz	Windows 2003	465 GB	4 GB
GLE	2.4 GHz	Windows 2003	465 GB	4 GB
HAE	2.4 GHz	Windows 2003	1.5 TB	4 GB
KES	2.4 GHz	Windows 2008	1 TB	4 GB
MBES	2.5 GHz	Windows 2008	465 GB	4 GB
PFE	2.4 GHz	Windows 2003	6 TB	4 GB
AMS	2.4 GHz	Windows 2008	1 TB	4 GB
BMS	2.4 GHz	Windows 2003	6 TB	4 GB
CMS	2.4 GHz	Windows 2003	1.4 TB	4 GB
SMS	2.4 GHz	Windows 2003	1 TB	4 GB
AHS	2X2 GHz	Linux	2 TB	2 GB
BHS	2X2 GHz	Linux	2 TB	2 GB
CHS	2.4 GHz	Windows 2003	2.1 TB	4 GB
EMHS	2.4 GHz	Windows 2008	1.6 TB	4 GB
EMES	2.5 GHz	Windows 2003	465 GB	4 GB

Camera servers have been upgraded with additional storage capacity at all secondary schools. This additional storage increases the number of days that video can be stored and accessed on the server. The current price for camera servers is $1,700 with an average life of between 3 and 5 years. MCPS currently does not budget for a replacement cycle for its camera servers.

MCPS has begun the process of migrating to a more cost effective Linux based solution (Exacq vision). This server/software was installed as part of the construction project for AHS, BHS and AMS.

Currently, the security camera coverage for the exterior of the building is limited. An evaluation has begun in order to install outdoor cameras at all elementary and secondary locations.

B. Security Systems

MCPS uses a DSC Maxsys wireless LAN-based security system to centrally monitor and manage the schools' burglar alarms. Schools that still need to be upgraded to this configuration are: CMS, BMS, EMHS, and AES.

MCPS received a State Security Grant in the summer of 2013 to install security systems in FBE, CPS, CES, CHS and HAE. In December of 2013 the Board of Supervisors appropriated further funds to implement this security system in the remainder of the schools. The school security project consists of three basic components: Electronic audio/visual control of the main entrance; electronic keyless access of high traffic doors; video display of entrance security camera.

C. Phone Systems

Telephone services are instrumental to the daily functioning of a school system. Telephones provide a school system with the means for:

- Parental Communication
- Community Contact
- Access to Services
- Administrative Support
- Emergency Communication

To provide the best possible telephone system MCPS uses a combination of Centrex with a long distance and cell phone providers.

MCPS elementary and secondary schools have phone access in every classroom. MCPS is using Iwatsu PBX systems that use IP Telephony to

deliver voice and intercom service over the existing Local Area Network to the Classroom. Eight sites (AHS, BHS, CHS, AMS, AES, SMS, Facilities, and Transportation) have Comdial PBX systems that are at End-of-life and present a vulnerability to dependable phone service. Additionally, three schools (CMS, BMS, EMHS) are using digital Iwatsu PBX systems that do not use voice over IP.

Plans are underway to implement wireless SIP phones at FBE and EMES for administrative personnel using the existing wireless access system. This would give administrators direct access to the phone system and reduce the costs for additional hand held radios.

Currently MCPS has begun the migration to Avaya IP Office PBX. This system saves costs while providing greater service and capability in voice mail and mobility. It is envisioned that greater cost savings can be achieved through the Avaya system by the centralization of lines using PRI or SIP trunk.

In 2009 MCPS added an emergency phone notification system (School Messenger) to its telecommunications package. School Messenger is fully integrated with the demographics housed in the Student Information System (Power School). This enables notifications to be rapidly issued either through the phone or a computer to any number of targeted stakeholder groups. In cases of emergency, the entire primary contact population of the Division will have an initial contact both by phone and email in less than 10 minutes.

D. Cell Phones

Cell phone service is used by the district to support key instructional leaders and for communication in the service departments. Key instructional leaders spend a large share of their time away from their offices and often need to be reached after normal business hours. Service department personnel are required to travel around the county as part of their job responsibilities and use “walkie-talkie” features to communicate within the department.

As part of the E-Rate process for funding year ‘12-‘13, MCPS consolidated its wireless business with a single provider. This has enabled the Division to maximize its E-rate discount and standardize platforms to improve support.

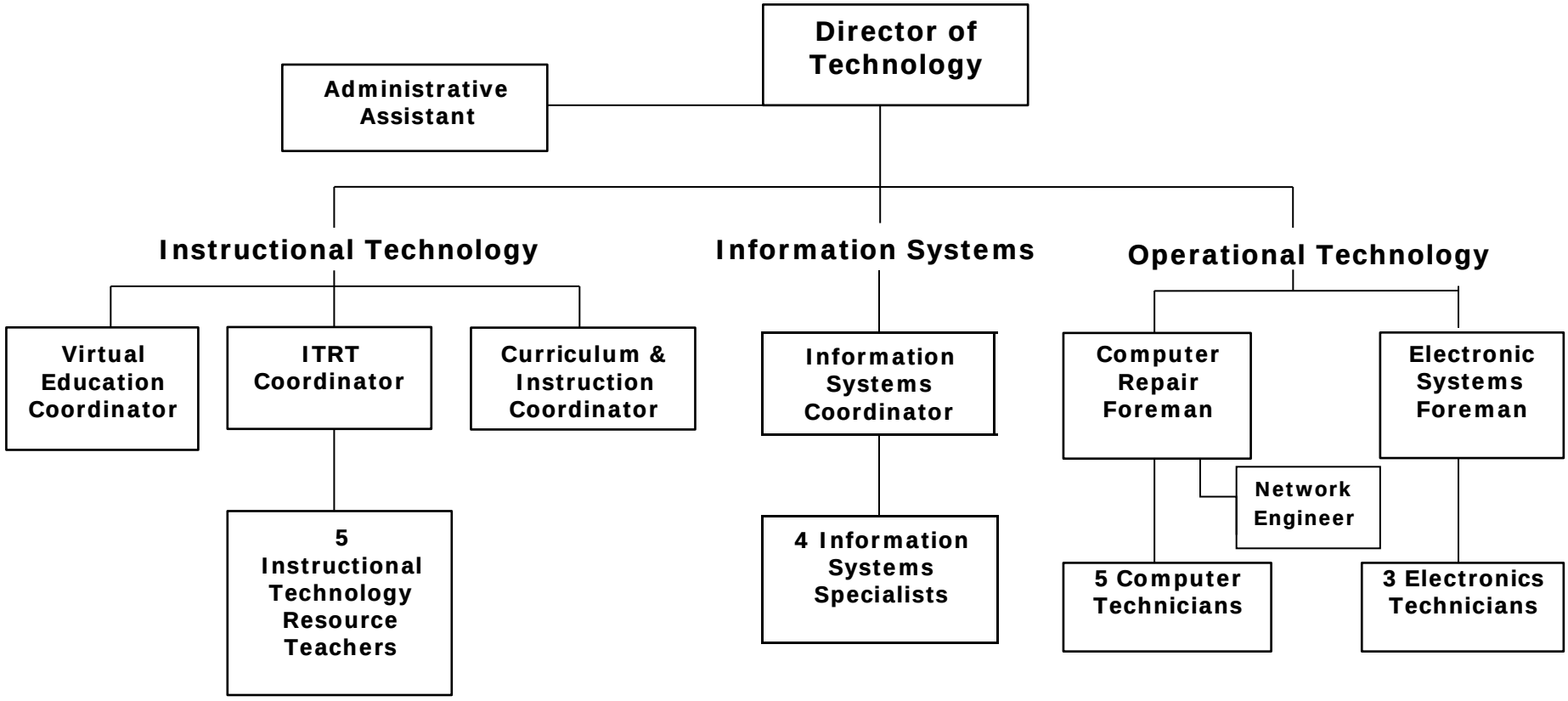
IV. Technology Personnel

The MCPS Technology Department consists of 26 individuals working in three distinct groups. These individuals are comprised of 10 certified staff (individuals holding a teacher's endorsement) and 16 non-certified. The groups comprising the department represent specific areas of concentration or functionality in technology, which are as follows:

- Instructional Technology – Technology integration traditional, virtual, and blended classroom instruction.
- Management Information Systems – Electronic data management applications.
- Operational Technology – Maintenance and management of computer, security, and communication-based systems.

A chart of the structure of the MCPS Technology Department follows on the next page.

Technology Department Organizational Chart



The 16 non-certified technical positions were originally locally funded, with the last one being added in 1998. Positions have been juggled between the various groups as conditions and demands have changed with the growth of technology. In 2005, Virginia recognized the importance of these technical positions in the Standards of Quality and, respectively, in the funding formula for localities. *(1:2:15)* Montgomery County did not choose to use this increase in revenue to add any additional technical positions and is still staffed at the 1998 level.

The International Society for Technology in Education (ISTE) has developed a rubric indicating ratios for staffing levels as related to number of computers assigned to a technician. The levels are as follows:

Deficient – Greater than 250 computers to one technician
Limited – Between 150 and 250 computers to one technician
Satisfactory – Between 75 and 150 computers to one technician
Exemplary – Less than 75 computers to one technician

Other factors that affect these ratios are; replacement cycle, warranty, standardization of equipment, certification, and training of staff (International Society for Technology in Education, Technology Support Index, p. 3). MCPS purchases standardized Gartner Group Tier 1 equipment and all technicians have completed a Dell certification program. However, MCPS does not have a replacement cycle for computerized equipment and the current computer to repair technician ratio for the Division is 1163 to 1.

Prior to 2005, the Technology Department had four locally funded certified Instructional Technology Coordinators. These individuals were classified as teachers on a 12-month extended-day contract. Since then the coordinators have been placed on a new 12-month administrative pay scale. In 2005 Virginia Standards of Quality introduced the position of Instructional Technology Resource Teachers (ITRTs). According to the standards, one ITRT position should be employed per 1,000 students. *(1:2:14)* MCPS added 5 new staff members to be in compliance with the new standard. A description of the ITRT program can be accessed at: http://www.doe.virginia.gov/support/technology/administrators_teachers_staff/teacher_guidlines.pdf

The 10.5 month contract for ITRTs allows for coverage before the school year begins as well as after it ends. TRTs also have an extended day contract which allows for adequate support for both the Elementary and Secondary schools' daily schedules. Because the extended day does not count towards individual employees' retirement, the Division should work to place ITRTs on an appropriate salary scale that is not dependent on supplemental contracts.

Staffing for the Technology Department is based on, and is in compliance with, the requirements as stipulated in the Virginia Standards of Quality. *(1:2:14, 1:2:15)* General job responsibilities follow:

Director of Technology

- Coordinates and manages the Technology Department.
- Assigns tasks to department heads and creates timelines for the completion of these tasks.
- Plans and coordinates District technology projects and initiatives.
- Develops and implements technology procedures, processes and policies.
- Advises the School Board and Superintendent on technology issues.
- Manages and oversees technology-based grants.
- Files E-Rate application and reimbursements.
- Oversees School Board technology budget.

Instructional Technology

Technology Coordinator for Curriculum

- Works to ensure that all instructional efforts have necessary technology support.
- Meets regularly with District curriculum supervisors and conveys instructional needs to appropriate technology staff.
- Guides and advises the lead ITRT when appropriate.
- Collaborates with instructional staff to purchase necessary software/hardware.
- Serves as liaison to technology vendors.
- Completes tasks assigned by Director of Technology.

Virtual Education Technology Coordinator

- Ensures that all technical equipment and devices that support virtual courses are functional.
- Manages Division's course management system and auxiliary virtual programs.
- Coordinates training for course management system end users.
- Coordinates development of training for virtual education teachers and virtual learning coaches.
- Coordinates consistent delivery of effective online courses.
- Coordinates development of online professional development opportunities for teachers and staff.
- Serves as liaison for the Virtual Virginia State School
- Keeps abreast of current virtual education trends and relays vital information to all necessary stakeholders.
- Completes tasks assigned by Director of Technology.

Instructional Technology Coordinator

- Works with ITRTs to plan and implement long-term for technology.
- Mentors ITRTs.
- Advises and assists technology resource teachers in managing technology at individual sites
- Provides direction for ITRTs in implementation of new technologies
- Coordinates and manages district-wide instructional technology projects
- Maintains the Visitor Management System for the Division
- Maintains network and application user accounts
- Completes tasks assigned by Director of Technology.

Instructional Technology Resource Teachers

- Help teachers effectively utilize instructional technology resources within the structure of classroom lessons.
- Provide assistance and support to all instructional programs within MCPS.
- Manage technology at individual school sites.
- Confer regularly with computer technician and provide necessary guidance and support
- Facilitate preparation of site technology plan.
- Serve as liaison between technology and schools.
- Visit schools sites weekly to attend to staff technology needs.

Management Information Systems

Management Information Technology Coordinator

- Coordinates and manages the activities of the Management Information Staff.
- Assigns tasks to staff members and coordinates creation of timelines for the completion of these tasks.
- Coordinates with other branches within the organization to assess needs and development plans to meet needs.
- Develops and executes staff development and training activities necessary for technology applications.
- Oversees planning and training for development and implementation of new applications and updates to applications in use in the District.
- Completes tasks assigned by Director of Technology.

Management Information Systems Integrators

- Provide support and training to end-users.
- Manage network infrastructure.
- Work to ensure data integrity.
- Maintain knowledge of MIS guidelines and policies and helps implement changes when necessary.
- Diagnose and troubleshoot applications.
- Develop applications to meet the needs of department or district when appropriate.

Operational Technology

Computer Maintenance Foreman (1:2:15, 4:2:3)

- Provides technical support to Coordinators and ITRT group when necessary.
- Coordinates and manages the activities of technicians.
- Maintains warranty parts replacement.
- Makes weekly site visits to schools with ITRT Coordinator.
- Maintain file servers at each school.
- Diagnoses and troubleshoots applications.
- Establishes and maintains relationships with vendors regarding new equipment, service contracts, and technical support.
- Explores and incorporates new computer-based technologies.

Computer Maintenance Technicians (1:2:15, 4:2:3)

- Maintain and repair computers.
- Work together with ITRTs to prioritize work orders and support site instructional technology needs.
- Test and deploy new software as directed by maintenance foreman.
- Diagnose and troubleshoot applications.

Communication/Electronics Foreman (1:2:15, 4:2:3)

- Coordinates and manages daily tasks of communications/electronics staff.
- Works with technology director and staff to plan and implement communication/electronic projects.
- Advises and supports school administrators and staff regarding equipment and projects.
- Establishes and maintains relationships with vendors regarding new equipment, service contracts, and technical support.
- Explores and incorporates new communication and electronic technology.

Communication and Electronic Technicians (1:2:15, 4:2:3)

- Provide district with service on multiple types of communication and electronic equipment such as:

    - Security systems
    - Two-way radios
    - Phone systems
    - Intercom systems
    - Voice messaging systems
    - TVs and master TV systems
    - DVD/CD Devices
    - Overhead Projectors
    - Master time systems
    - Fax machines
    - Copier management
    - Distance learning systems
    - Video production
    - Computer cable networks
    - Digital lighting systems
    - Sound systems

- Provide support and training for new equipment to school administrators and staff.
- Plan, prioritize, and implement daily tasks based on priority.
- Maintain knowledge of changing technologies within the communication and electronic field.
- Coordinate with vendors regarding equipment repair, replacement and ordering parts.
- Coordinate with Communication and Electronics foreman regarding the design and implementation of projects.
- Complete LAN wiring and upgrades.

V. Technology Integration

A. Instructional Technology Resource Teachers (ITRTs)

ITRTs collaborate with teachers to provide the resources, ideas, and equipment necessary to seamlessly integrate technology across the curriculum. *(1:3:7)* Currently ITRTs:

- Provide professional development for individuals and groups at school sites.
- Model lessons.
- Collaborate with teachers to develop lessons.
- Disseminate information about technology resources, emerging technologies, best practices, and professional development opportunities. *(3:3:1, 4:3:1)*
- Provide an online lesson bank to which teachers can contribute and have access.
- Advise school administrators regarding technology purchases and implementations, District technology initiatives, managing building technology resources.
- Serve as advisor to school technology committees.
- Assess and advocate for needs of school sites.
- Teach college courses to MCPS teachers through New River Community College.

B. Technology Resources

1. Equipment available to Instructional Staff

A 21st Century Learning Environment by definition is one that provides architectural and interior designs for group, team, and individual learning (Partnership for 21st Century Skills. (2004) Retrieved from skills framework website http://www.p21.org/index.index.php?option=com_content&task=view&id=354&Itemid=120), Montgomery County Public Schools has been successful in providing a fully integrated technological 21st century learning environment in the construction of the two newest elementary schools. *(1:3:6)* Unfortunately, the school system does not meet the 21st Century Learning Environment goal of allowing equitable access to quality learning tools and technologies. The reason for the failure, on the one hand, is evident in the success of the other. Through the funding of a new construction bond the Division is able to provide state-of-the-art facilities. However, operational budgetary constraints cause existing classrooms to lag behind, which produces

inequitable access to students across the county.

Without Division-level fiscal leadership, the above situation results in a disparity of the levels of classroom technologies and configuration. Factors that contribute to the disproportionate distribution of technology include the level of local funds available and Principal leadership. The method to overcome this dilemma is to set a uniform standard classroom model for the Division to work toward attaining at all levels.

MCPS has defined and adopted a standard configuration for a 21st century classroom. The Division needs to establish a plan and process for Division-wide implementation. The primary resource used in the development of this model was the North Carolina State University website: http://www.ncsu.edu/classtech/standards/ This model will provide a uniform standard focus for the Division and ultimately a means for reducing disparities in access to technology across the county.

Needs Assessment Checklist

The first step in configuring 21st Century classrooms is to evaluate existing school sites throughout the Division. The following checklist should be completed for each space that may require technology. (There are other functionalities about the space beyond technology that will need to be identified and addressed.) The checklist enables end users to identify and prioritize technology functions for incorporation in the planned design. Progress can follow set priorities as budget becomes available. It is vital that the spatial and technological functionalities are considered together as they depend on each other for their success.

Functionality for Computing	Functionality for Technology Usability and Support
▪ Standard Computer environment ▪ Ability to bring in external media (e.g. CDs, DVDs, USB devices) ▪ Teacher has access to a tablet device ▪ Ability to browse the Internet ▪ Ability to show streaming media ▪ Access to network file space ▪ Convenience of in-room Computing ▪ Ability to display digital slideshows ▪ Access to productivity software (e.g. Microsoft Word, Excel) ▪ Access to common set of specialized software ▪ Ability to display remote computing devices ▪ Access to email functionality for Ad-Hoc notations and display ▪ Document camera ▪ SMART Board or Wireless Slate ▪ Ability to connect external AV devices ▪ Ability to display VHS media ▪ Ability to display DVD media	▪ Speech amplification ▪ Reliability of secure technology in a controlled environment ▪ Capability to comply with Section 508 accommodation regulations ▪ Fixed installation ▪ Mobile installation ▪ Ability to display high resolution graphics ▪ Ability to project material from multiple sources simultaneously ▪ Ability to audio conference with remote sites ▪ Ability to capture written material ▪ Ability to integrate students from remote locations into classroom ▪ Ability to capture class session ▪ Ability to video conference with remote site ▪ Ability to display and capture student work from in-class exercises ▪ Ability to electronically collect feedback from students (i.e. Personal Response System)

2. Participate in Pilot Projects Involving Emerging Technologies *(3:3:2, 5:3:1)*

MCPS explores the use of emerging technology. Interactive devices are among the most prevalent instructional technology tools. The use of iPads and other tablet devices in instruction is being extended to supplement classroom instruction. Also, the Special Education department continues to invest in devices to supplement classroom instruction and provide Assistive Technology to students with disabilities. Additionally, MCPS students now have the opportunity to use their own interactive devices in the classroom setting. Participation in pilot ventures should continue in order to obtain and integrate emerging technologies to promote engagement and foster learning.

BYOD – Bring Your Own Device or BYOD was enacted by a change in policy that allows students to bring and use their own electronic devices for educational purposes at the discretion of the classroom teachers. The Instructional Technology Staff offer support by working with teachers to develop lessons and users for the electronic devices.

Google Apps – Google Apps for Education is a cloud based application that allows students to produce, share, and store assignments, notes, and projects. With Google Apps for Education, everything is automatically saved in the cloud. This means that emails, documents, calendar, and sites can be accessed – and edited – on almost any mobile device or tablet from anywhere, and anytime. Within the Google cloud MCPS has a registered domain that allows students access to access their files, as well as communicate through email in a secure and safe environment.

Economics and Personal Finance – The State DOE has recently mandated all high school students participate in an online learning experience prior to graduation, as well as complete a 1-credit Economics and Personal Finance course. MCPS decided to fully integrate these two requirements by offering students a virtual economics and personal finance course that was initially taught through the Desire2Learn course management system that is owned and operated by Virtual Virginia. MCPS has since made the decision to move

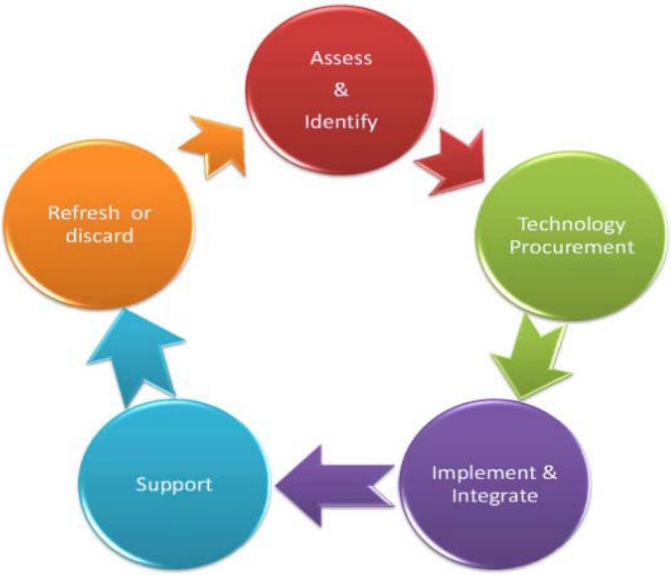
this course into its own course management system, Moodle. A pilot is being conducted during the 2014 spring semester, as well as the Summer Academy session to determine how effective and efficient Moodle is able to manage this demanding learning environment. Upon completion of both trials, a final assessment will be conducted to determine overall performance.

E-Back Pack Initiative/Tablet Pilot – MCPS developed and implemented a project to pilot a one-to-one initiative of Apple and Windows interactive tablets. Four classrooms of 9th grade students were selected to receive the devices for the 2014 spring semester. Four main goals of the pilot were:

- to determine which device would be most compatible with current MCPS infrastructure and resources
- to determine if teachers would develop new approaches to planning and instruction by integrating tablet resources to increase engagement, individualization and differentiation
- to determine if students would use the devices appropriately for collaboration, communication and assignments and projects
- to determine if a one-to-one initiative would maximize the use of electronic instructional materials/resources and free up existing computer labs and laptop carts
-

C. Instructional Software/Applications (3:3:2)

Instructional technology is used in the classroom to enhance teaching and learning. The use of technology should never take place independently of a sound instructional plan. Thus, software and equipment is purchased to meet instructional needs. Although some technologies become obsolete as advances are made, others continue to be viable solutions. In the interest of efficiency and effectiveness, it is imperative that technology applications and equipment are evaluated regularly. MCPS has adopted the use of the Technology Lifecycle Model for the planning, procurement, implementation and evaluation of technology-based systems. *(1:3:5) The* following diagram is a graphical illustration of the Lifecycle Model:



Often software programs are purchased without the involvement of technology department staff. In such cases purchasing records and media are unavailable. Due to changes in staffing and funding streams, this is the case with many applications purchased specifically for use in special education. Listed in the following table are software/applications used for instruction in MCPS. The list includes items widely used throughout the Division and may not be completely inclusive.

Software / Application (*aligned with SOLs)	**Grade Level**	**Intended Purpose**	**Life Cycle Position**	**Supervisor / Curriculum Area**
Adobe Creative Suite (CS3, CS4, CS6)	8-12	Toolkit for Graphic design and web design	Support	CTE Supervisor
ArcView	6-12	Allows manipulation of GIS layers and aerial photos to create custom maps	Implement/Integrate	Science Supervisor & Technology Staff
Audacity	3-12	Audio editor for recording, slicing, and mixing audio	Support	Technology Staff
Breakthrough to Literacy	PreK-2	Develops reading, skills, reading comprehension, vocabulary acquisition, and Fluency	Refresh	Reading Supervisor
Dreamweaver	Admin	Web design software	Support	CTE Supervisor
Edmodo	K-12	Instructional Management Internet Site	Support	Curriculum Supervisors
Education City*	K-8	Online educational content	Support	Curriculum Supervisors
eMediaVA*	K-12	State DOE online education content	Support	Technology Staff
Expert 21	6-12	Reading Program	Support	Reading Supervisor/Technology Staff
Failure Free Reading	K-12	Remediate special needs students	Refresh	Special Education Supervisor
Follett E-Reader	3-12	Test Preparation	Support	District
Geometry Sketchpad	8-12	Instructional software	Support	District

Google Earth	1-12	Virtual globe, map and geographic information program	Implement/Integrate	Technology Staff
In Design	9-12	Graphic design software for publications	Support	CTE Supervisor
Infinite Learning Lab	K-5	State DOE Math, Science, English, & Life Skills Digital Learning Library	Support	Technology Staff
Inspiration*	3-12	Graphic organizer software develops critical thinking, comprehension, and writing skills	Support	Technology Staff
Inspiredata	5-8	Allows students to investigate, analyze, and represent data and information in dynamic graphs and charts	Support	Technology Staff
Interactive Achievement – Learning Management System	2-12	Online testing and data analysis program used primarily for Benchmark testing	Support	Director of Elementary Education
Interactive Achievement – Longitudinal Data System	K-12	Longitudinal Data System which provides quick retrieval and safe storage of data	Implement and Integrate	Implement and Integrate
iTest	9-12	Test Preparation Software	Support	District
iTunesU	K-12	Educational Software Library for iPad/iPod	Support	District
Key Train	9-12	Vocational training that reinforces basic skills	Support	Testing Coordinator
Kidzsolution SOLtoGO*	3-8	SOL-preparation activity	Refresh	Curriculum Supervisors
		Graphic organizer	Support	Technology

Kidspiration*	K-3	software develops visual learning skills		Staff
Lexia	1-12	Currently used at CMS and CHS by the reading teacher and special education to support the teaching of primary reading skills. Purchased by special education.	Refresh (Yearly Purchase)	Curriculum Supervisors
MarcoPolo*	K-12	Instructional resources and lesson plans to support standards	Support	Technology Staff
Math 180		Math Intervention Program	Support	Math Supervisor/Technology Staff
Microsoft Office	K-12	Word processing, database, spreadsheet, publishing, and presentation applications	Support	Technology Staff
Micro Type	K-8	MicroType is an alphabetic, numeric, skill building, and keypad program that teaches correct finger placement and builds basic skills, then works on speed and accuracy	Support	CTE Supervisor
Mini Tab	9-12	Data Analysis Software	Support	Math Supervisor
Moodle	3-12	Course Management System	Refresh	District/Virtual Education Coordinator

MovieMaker	3-12	Video creating/editing software, included in Microsoft Windows	Implement/Integrate	Technology Staff
Photoshop	9-12	Digital photograph manipulation	Support	CTE Supervisor
Photostory	1-12	Create slideshows using digital photographs	Implement/Integrate	Technology Staff
PLATO (Edmentum)*	6-12	Provides cross-curricular virtual, differentiated instruction	Implement & Integrate Support/ Train	District
RAZ-Kids	K-5	Early literacy development	Support	Supervisor of Pre School
Read 180	6-12	Reading Intervention Program	Support	Supervisor of Math/Technology Staff
Read Out Loud	6-12	Provides accessibility supports like text-to- speech and study tools that help you read with Comprehension	Support	Special Education Staff
Read-Write Gold	6-12	Text-reader to reinforce reading skills	Support	Special Education Staff
Renaissance Place: Accelerated Reader Star Early Literacy Star Math Star Reading	K-12	Reading and math progress indicators and skill development	Refresh Implement	Reading Supervisor RTI Coordinator and Director of Special Education
Renzulli		Individualized resources for students' specific interest areas and learning styles	Implement	Gifted Supervisor

RiverDeep*	6-8	Assessment and prescriptive instruction specific to student's needs	Refresh	Math Supervisor
Rosetta Stone	3-12	Currently only CD-based and used by ESL teachers. Gifted and ESL want to move to web-based seats for ESL and foreign language experience	Refresh	Language Arts and Gifted Supervisors
Scholastic Math Inventory	6-12	Math progress indicator	Support	Math Supervisor/Technology Staff
Scholastic Phoneics Inventory	6-12	Reading progress indicator	Support	Reading and Language Arts/Technology Staff
Scholastic Reading Counts	6-8	Reading progress indicator	Support	Reading Supervisor
Scholastic Reading Inventory	6-8	Reading progress indicator	Support	Reading and Language Arts Supervisors
Smart Notebook 10	PK-12	Creation and delivery of interactive lessons	Implement/Integrate	Technology Staff
SOLPass*	3-12	Web-based SOL preparation resource	Support	Science and Social Studies Supervisors
Spectrum	Pk-12	Library Management Software	Refresh/Discard	Supervisor of Library Media Services
SPORE	5-12	Computer game for a variety of systems that allows users to create unique creatures and guide them on epic journeys through universes of their own creation. (not recommended for instruction)	Implement	Science Supervisor

Study Island*	K-12	Online, standards-based learning tools	Support	Language Arts Supervisor
Success Maker*	2-8	Math and reading assessment, management tools, individualized instruction, and curriculum resources	Support	Curriculum Supervisors
Survey Monkey	Admin	Vehicle for creating and delivering on-line surveys	Support	Directors
System 44		Reading Intervention Program		
TestNav/Practice Tests/SOL Testing	3-12	State software used for formal testing	Support	State Dept.
United Streaming*	K-12	Provides a database of curriculum-related videos, images, and supplemental resources	Support	Technology Staff
Watershed Database	4-12	Database of water quality testing results within the County	Refresh	Science Supervisor

D. Support Software / Applications

An integral aspect of the effectiveness of the MCPS Technology Department is efficient operations. To keep interruptions to instruction and downtime at a minimum, technicians employ the use of a variety of software and applications. Use of these applications also permits technicians to accomplish an ever-growing number of technology tasks with inadequate staffing. Additionally, a wide array of software exists within the Division used for the management of data. *(1:2:15, 4:2:3)*

The following table details software and applications used as well as their intended purpose:

Software / Application		**Intended Purpose**	**Life Cycle Position Position**	**Operational Area**
Symantec Ghost		Imaging software that creates an image of one machine that is cloned to multiple machines at once.	Support	Technical
Deepfreeze		Desktop security software that reverts to the original configuration upon reboot	Support	Technical
AutoIt		Software that creates an automated install files to install software on multiple machines at once.	Refresh	Technical
What's up Gold		Software that gives an overview of network status.	Support	Technical
PRTG Traffic Grapher		Software that shows network traffic status and usage.	Support	Technical
Cyber Gauge		Software that shows network traffic status and usage.	Support	Technical
Blue Coat SG Appliance		Internet filtering software that keeps inappropriate sites from being viewed. This appliance is used by the district to ensure CIPA compliance and traffic monitoring.	Support	Technical
Blue Coat PacketShaper		Software that controls the amount of bandwidth that an application uses, sets network applications priorities, and is used for traffic monitoring.	Support	Technical

Munis		Financial and Human Resource Information System	Refresh – operating system upgrade	Information Systems
Insight		Student longitudinal data system	Implement	Information Systems
EIMS		Tracking software for various achievement statistics as related to students	Implement	Information Systems
OnTrac		Online benchmark testing	Support	Information Systems
VersaTrans		Routing software for student transportation	Support	Information Systems
ZIS		Passing/receiving information to/from student information system for vertical and horizontal agents	Support	Information Systems
Café Enterprise		Student meal tracking and payment	Support	Information Systems
Subfinder		Database of substitute employee information with phone capabilities	Support	Information Systems
School Messenger		Software for contacting student guardians via phone or email	Support	Information Systems
Moodle(Instruction and PD)		Course Management System	Refresh – update to application software	Information Systems
Pearson's Power School		Student Information System	Support	Information Systems
Chemoventory		Database of Chemicals used in Division buildings	Support	Information Systems
ICal		Online Calendars	Support	Information Systems
M+ Guardian		Spam filter	Support	Information Systems
Spectrum		Library Management Software	Support	Information Systems

VI. Website

The Internet has quickly become a widely consulted resource for information. MCPS strives to maintain open communication with all stakeholders. One of the primary avenues of communication is the Division website. Maintaining current, pertinent information on the website is an ongoing challenge. The adoption of Mod-X as the MCPS Content Manager has helped to achieve a sense of uniformity among the Division schools. ITRTs have also worked with staff in each building in order to empower them with the knowledge and skills necessary for maintaining an up-to-date and attractive individual school web site. The Division's home page is maintained by the School Public Information Officer/Board Clerk. We continue to impress upon leadership the need to provide compensation in some form for the school webmasters due to the nature and magnitude of the task as an added duty. *(1:2:18)*

VI. Professional Development

Professional development efforts improve and enhance effective instruction and stimulate professional growth among teachers. In collaboration with Curriculum Supervisors and Department heads, the Technology Department is working to provide comprehensive professional development for MCPS teachers and staff. *(2:2:5, 3:1:2)*

Most technology-related professional development is conducted by ITRTs. ITRTs offer instruction for teachers and staff in several ways. One-on-one and group assistance is offered at school sites upon request. Although training is often requested by the building administrators or staff, ITRTs initiate sessions upon recognizing a need. Also, ITRTs facilitate training for District-wide implementations. For example, in 2008-2009 MCPS implemented Interactive Achievement, an application used for Benchmark Testing. After the vendor completed the first training, ITRTs supported the application by assisting teachers at school sites. With the adoption of a new student information system in 2013-2014, TRTs spent a great deal of time training teachers and staff on its use. ITRTs continue to be an invaluable resource to the Division.

Perhaps the greatest resource teachers have available is knowledge and practices of their colleagues. However, due to a variety of factors, it is difficult to find time to collaborate. The development of an online repository of lesson plans and instructional ideas for teachers has proven extremely beneficial. *(3:1:1)* Moodle for Professional Development, the Online Course Management System used by MCPS staff, has become a place of sharing between curriculum supervisors, teachers, and staff. Currently, math, science, social studies, and English all have content repositories filled with lesson plans and resources to help teachers. Because the work is ongoing, resources will continue to be added to these sites as they become available. In addition, the Facilities Department

houses over 25 online courses that are yearly requirements for its department members. School Health has three courses for Division employees, while Human Resources have two. Special Education also has developed 14 courses for its teachers and staff.

Benchmark Testing is an integral aspect of preparing students for SOL tests. Through evaluation of Benchmark testing results, teachers glean specific information related to instructional needs among students. Interactive Achievement was implemented five years ago to administer benchmark tests in Language Arts and Math in grades 3 through 8, as well as to some students in high school math courses. ITRTs are available to assist teacher with disaggregating and interpreting data to aid them in refining instruction to meet individual needs. MCPS should extend the use of the application to other curricular areas and grades.

Electronic Registrar Online (ERO) is the tool used in MCPS to manage professional development. Currently it provides a searchable database of course offerings as well as a means by which instructors can manage registration and staff can keep track of learning activities. ERO offers a variety of tools to assist teachers and administrators in managing professional development. The full functionality of the program should continue to be explored and expanded as opportunity allows.

The MCPS Technology department partners with New River Community College to offer three-credit courses which allow teachers to obtain recertification points. The focus of each course is to assist teachers in integrating available technology within MCPS into the curriculum. Courses have been well attended and well received by MCPS staff and continue to be offered by the Division.

There are several computer labs in each geographical strand in the Division. The facilities are only utilized during the school day by MCPS students and teachers and aren't open to the community. In an effort to provide resources to and involve stakeholders, the Division should consider offering technology workshops to the entire Montgomery County community. It would be beneficial to survey parents and community members to obtain information about instructional technology needs.

The MCPS Technology Curriculum Coordinator serves as a liaison for the communication between curriculum supervisors and the technology department. One of the responsibilities of this Coordinator is to convey instructional technology needs and facilitate meeting those needs. Continued needs expressed by Supervisors are included in the needs assessment portion of this plan.

VII. Student Information

Montgomery County Public Schools adopted a new Student Information System (SIS) in the summer of 2013 and opened the school year 2013/14 with Pearson's Power School in place. During the conversion from the previous Star-Student to Power School, many problems in data entry and integrity came to light. Data entry issues were discovered in all areas but were especially evident in the following:

- student contacts
- enrollment
- medical
- student alerts, medical and custodial

Intensive training for all SIS users began in the spring of 2013. Roles were analyzed and training outlines were developed and administered in module form based on tasks required for the different roles. Every effort was made to provide a smooth transition into the new SIS and to improve record- keeping and data integrity in the process.

Training emphasized following proper procedures in data entry and maintenance. Sessions were conducted using step-by-step methods to encourage users to follow similar procedures at the home schools.

Training and Procedural documentation used in the training was publicized and made available on the county website for accessibility to all Power School Users.

The Power School Help Line was instituted for all users to phone or e-mail questions/concerns about procedures and processes in the new SIS. Continuous training sessions should be offered on a regular basis to allow users opportunities to learn new procedures or review previous offerings.

Data integrity is of critical importance. Therefore, individuals in all Division offices and departments need to be committed to entering and maintaining all aspects of data. MCPS should adopt practices in hiring, training, and staff development sessions that reinforce the importance of data integrity.

The Power School information system gives parents and students the opportunity to access Student Information through Parent Portal and Student Portal. A link to the Parent/Student Portal is offered on the MCPS home page.

Power School is an information system, not a data warehouse. Although MCPS has recently begun to implement the use of a data reporting application, needs for a fully functional data warehouse are unaddressed by this project.

VIII. Virtual Education

Virtual Education has maintained a steady interest since its introduction to MCPS. During the course of the past eight years, student participation in online courses has continued to increase. Students have enrolled in courses through the Virtual Virginia State Online School, as well as locally developed courses. The addition of four New River Community College "College Zone" courses has also attracted more online participants. The steady growth indicates a genuine interest in enrolling in non-traditional courses.

By using quality Virtual Virginia online courses, MCPS has been able to focus on developing additional online opportunities that often become barriers to student graduation. The Division has been able to create its own English 9, 10, 11, and 12 course structures that are ready for updating and roll out when needed. With curriculum support, the District has also been able to develop virtual dual-enrollment Music Appreciation, Art Appreciation, Sociology, and Psychology courses. It has also developed a US/VA Government 12 class for use during the Summer Academy for early graduates. Future plans now include Health and PE for the Summer Program, as well as a locally developed Economics and Personal Finance course.

During the 2011-2012 term, the State Department of Education implemented a new graduation requirement for all rising freshman that stated each must complete an online learning experience prior to his/her graduation. They also required each student complete a course in Economics and Personal Finance prior to graduation. MCPS took advantage of these new mandates to adopt a hybrid virtual course developed by the State Department, and implemented and taught/mentored by MCPS instructors in order to satisfy both requirements. This has caused a dramatic jump in the number of students taking virtual courses, with increasing numbers anticipated each year.

MCPS Virtual Class Enrollments
2011-2012

MCPS Virtual Education	**AHS**	**BHS**	**BMS**	**CHS**	**EMHS**	**Total**
NRCC DE Virtual	**17**	**3**	**0**	**35**	**4**	**59**
Summer Academy Virtual		**8**		**2**		**10**
Virtual Virginia – Middle School			**11**			**11**
Virtual Virginia – High School	**16**	**14**	**11**	**17**	**7**	**75**
Total Number of Courses = 25						
Total Enrolled Students	**33**	**25**	**11**	**54**	**11**	**134**

MCPS Virtual Class Enrollments
2012-2013

MCPS Virtual Education	AHS	BHS	BMS	CHS	CMS	EMHS	Total
NRCC DE Virtual	10			51		6	67
Summer Academy Virtual	8	14		10			32
Virtual Virginia – Middle School							
Virtual Virginia – High School	20	26	15	17	1	15	94
Total Number of Courses = 30							
Total Enrolled Students	38	40	15	78	1	21	193

MCPS Virtual Class Enrollments
2013-2014
(Spring/Summer Totals N/A)

MCPS Virtual Education	AHS	BHS	BMS	CHS	EMHS	Total
NRCC DE Virtual	9	1		41	12	66
MCPS 6120V (Econ/Personal Finance)	92	236		6		334
Summer Academy Virtual	n/a	n/a	n/a	n/a	n/a	n/a
Virtual Virginia – Middle School			7			7
Virtual Virginia – High School		27	7	9	26	69
Total Number of Courses = 22						
Total Enrolled Students	108	272	7	75	42	504

Another development within virtual education has been the implementation of Project A.I.M. This intervention program utilizes the virtual learning environment in order to afford students a chance to recover credit, receive

intervention assistance, or acquire a new credit needed for graduation. Four instructors serve this population online due to the wide expanse of Montgomery County. The two main platforms used for this program include Edmentum/PLATO and Moodle. Teachers design courses and personalize learning for each student admitted to the program in order to ensure students stay within their graduation cohort. Numbers in this program have grown exponentially as indicated by the below charts.

MCPS Project A.I.M. Course Enrollments
2011-2012

MCPS Project AIM	AHS	BHS	CHS	EMHS	ISS	RIV	MCSA	Total
	52	65	95	75	23	0	73	383

MCPS Project A.I.M. Course Enrollments
2012-2013

MCPS Project AIM	AHS	BHS	CHS	EMHS	ISS	RIV	MCSA	Total
	60	80	105	53	29	0	45	364

MCPS Project A.I.M. Course Enrollments (First Semester only)
2013-2014

MCPS Project AIM	AHS	BHS	CHS	EMHS	ISS	RIV	MCSA	Total
	50	56	80	38	29	12	n/a	241

Discussions have taken place with surrounding school divisions to investigate the possibility of course sharing with those districts that use Moodle and have aligned courses to meet the rigor of state and national standards.

The growth in online professional development efforts led to the

acquisition of a second Moodle server. Health, nursing, facilities, and human resources have all developed at least one course for teachers and staff and demand continues to grow. Courses continue to be developed to help the Facilities Department meet OSHA monthly training requirements, and State OSHA officials have commended Montgomery County on the large number of online opportunities available to teachers and staff.

Curriculum has also initiated staff development courses focused on specific content areas. Language Arts currently has a middle school vocabulary course that features ten different modules wherein teachers can earn up to 17 recertification points for each module completed. Additionally, Science, Social Studies, and Math have constructed an online resource library of instructional materials that are immediately available to K-12 instructional staff.

Discussions continue that address such emerging technologies as cloud storage, online resource libraries, tablet devices, e-text books, and other virtual learning tools and curriculum that are essential for expanding our virtual offerings and providing the most effective and engaging learning environment possible for students, teachers, and staff.

Appendix V:
Evaluation of 2010-2015 MCPS Technology Plan

Funding Source	2010-2011 Requested
State Grant (VPSA)	$715,130
Telecommunications	$314,677
Software Contracts	$275,553
Technology Maintenance	$115,427
Copier Lease	$239,643
Technology Replacement	$ 57,772
New Technology	$ 13,100
21st Classroom CIP	$ 0
Instructional Technology	$ 2,600
TOTAL	$1,672,353

Strategies and Measures	A = Achieved P = Partially Met N = Not Met	Timetable	Budget Source NA = Not Applicable
1:1:1:	P	2011-2012 School Year	NA
1:1:2:	P	2011-2012 School Year	NA
1:1:3:	N	2012-2015 School Years	N
1:1:4:	P	2011-2012 School Year	Shift from existing sources
1:1:5:	A	ongoing	NA
1:1:6:	P	2011-2012 School Year	State DOE
1:1:7:	N	ongoing	N
1:1:8:	P	ongoing	NA
1:1:9:	P	2011-2012 School Year	NA
1:1:10:	N	2011-2012 School Year	NA
1:2:1:	N	2011-2012 School Year	School Board FY Budget
1:2:2:	P	ongoing	School Board CIP Funds
1:2:3:	N	2011-2016 School Years	School Board CIP Funds
1:2:4:	N	2011-2016 School Years	School Board FY Budget
1:2:5:	P	2014-2015 School Year	School Board FY Budget
1:2:6:	A	2011-2016 School Years	School Board FY Budget
1:2:7:	A	2011-2012 School Year	State VPSA Grant
1:2:8:	A	2011-2016 School Years	School Board FY Budget
1:2:9:	P	Ongoing	State SOQ basic aide
1:2:10:	P	Ongoing	State SOQ basic aide
1:2:11:	P	2011-2016 School Years	State VPSA Grant
1:2:12:	A	2012-2015 School Years	School Board FY Budget
1:2:13:	A	2011-2012 School Years	School Board FY Budget
1:2:14:	N	2012-2015 School Years	School Board FY Budget
1:2:15:	N	2012-2015 School Years	School Board FY Budget

1:2:16:	N	Ongoing	NA
1:2:17:	N	Ongoing	NA
1:2:18:	A	2011	School Board FY Budget
1:3:1:	N	Ongoing	NA
1:3:2:	P	2011-2013 School Years	NA
1:3:3:	A	Ongoing	NA
1:3:4:	P	2012-2013 School Year	NA
1:3:5:	A	Ongoing	ITRT program
1:3:6:	A	Ongoing	NA
1:3:7:	A	Ongoing	Grant funds
2:1:1:	A	Ongoing	ITRT program
2:1:2:	P	Ongoing	ITRT program
2:1:3:	A	Ongoing	ITRT program
2:1:4:	A	Ongoing	ITRT program
2:2:1:	P	2012-2016 School Years	Curriculum Budget
2:2:2:	(Discontinued)	2012-2016 School Years	NA
2:2:3:	A	2011-2012 School Year	NA
2:2:4:	A	2011-2012 School Year	NA
2:2:5:	A	Ongoing	NA
2:3:1:	A	Ongoing	ITRT program
2:3:2:	A	Ongoing	ITRT program
2:3:3:	A	Ongoing	ITRT program
2:3:4:	A	Ongoing	ITRT program
2:3:5:	A	2012-2016 School Years	IT Budget
3:1:1:	A	2012-2016 School Years	ITRT program
3:1:2:	A	Ongoing	ITRT program
3:1:3:	A	Ongoing	ITRT program
3:2:1:	P	2011-2012 School Year	Funds Discontinued
3:2:2:	P	2012-2016 School Years	ITRT program
3:2:3:	P	2012-2016 School Years	ITRT program
3:2:4:	P	2011-2016 School Years	ITRT program
3:3:1:	A	Ongoing	ITRT program
3:3:2:	A	2011-2016 School Years	ITRT program
3:3:3:	A	2011-2016 School Years	ITRT program
3:3:4:	A	2011-2016 School Years	ITRT program
4:1:1:	N	2011-2016 School Years	School Board Budget
4:1:2:	A	2012-2016 School Years	School Board Budget
4:1:3:	N	2012-2016 School Years	Funds Discontinued
4:1:4:	A	2012-2016 School Years	State VPSA Grant
4:1:5:	A	Ongoing	NA
4:1:6:	A	2011-2012 School Year	Vendor Donations
4:2:1:	A	Ongoing	ITRT program
4:2:2:	A	Ongoing	ITRT program
4:2:3:	A	Ongoing	School Board FY Budget
4:2:4:	A	2015-2016 School Year	ITRT program
4:2:5:	A	Ongoing	ITRT program
4:2:6:	A	ongoing	ITRT program
4:2:7:	A	2016-2017 School Year	21st Century Project
4:3:1:	A	2015-2017 School Year	NA

4:3:2:	A	Ongoing	Grant Funds/Budget
4:3:3:	P	Ongoing	NA
4:3:4:	P	2011-2012 School Year	NA
4:3:5:	A	2011-2012 School Year	NA
4:3:6:	A	2011-2012 School Year	NA
5:1:1:	A	Ongoing	NA
5:1:2:	P	Ongoing	NA
5:1:3:	P	2010-2011 School Years	NA
5:1:4:	A	2010-2012 School Years	NA
5:1:5:	A	2010-2011 School Years	NA
5:1:6:	A	2010-2012 School Years	Curriculum Budget
5:2:1:	A	2010-2012 School Years	Curriculum Budget
5:2:2:	A	2010-2012 School Years	Curriculum Budget
5:2:3:	A	2010-2012 School Years	Curriculum Budget
5:2:4:	N	2010-2012 School Years	Curriculum Budget
5:2:5:	N	2010-2012 School Years	Curriculum Budget
5:2:6:	N	2010-2012 School Years	Curriculum Budget
5:3:1:	A	2010-2012 School Years	Curriculum Budget
5:3:2:	A	2010-2012 School Years	Curriculum Budget
5:3:3:	A	2010-2012 School Years	Curriculum Budget