

**Newton Public Schools**  
**Literacy21: Learning Powered by Technology**  
**Plan 2011- 2014**

### **Introduction to the Information Technology Department**

The Newton Public Schools' Information Technology Department supports the digital foundation of our system. Staff act as coaches and guides in digital literacy and proficiency for both our educators and learners. The department consists of three complementary teams that work in conjunction with each other to meet the instructional and administrative needs of Teaching and Learning district-wide. It is as a cohesive team that our department systematically supports the adoption, implementation, and access to digital resources and processes.

The Instructional Technology Team guides and supports the use of all of the district's technology resources both in and out of the classroom. Their primary role is to support teachers in the integration of technology into the teaching and learning process. They also provide technical help for all staff in their learning communities. They provide professional development through workshops and on-site consultation and assist in the research and development of new methods and technologies that advance our program. They are guides, coaches, and facilitators helping teachers and administrators master new challenges.

The Library Media Team supports and guides all K- grade 12 learners as they build reading, research, and digital literacy skills, providing direct instruction, modeling and co-teaching. Their role has grown beyond the walls of the traditional library and they have become global curators for the learning community. They also support technology in the schools, which is pivotal for just-in-time learning among teaching staff.

The Administrative Technology Group (ATG) is responsible for the network architecture and server framework that delivers information technology services to faculty and administrators throughout the district. ATG oversees all aspects of the wired and wireless network including design and implementation, capacity planning and upgrades, classroom and computer lab renovations, and day-to-day network operations. ATG works closely with the Instructional Technology and Library Media Teams from all the schools to insure that the network fabric of the district can adequately support the technologies used in our learning communities.

**Literacy21: Learning Powered by Technology Plan 2011 – 2014**

*The challenging and rapidly changing demands of our global economy tell us what people need to know and who needs to learn. Advances in learning sciences show us how people learn. Technology makes it possible for us to act on this knowledge and understanding.*

*-National Education Tech Plan*

The Literacy21: Learning Powered by Technology Plan 2011 - 2014 outlines the long range and annual goals of the Information Technology Department to support learning and operations in the Newton Public Schools. Newton's Literacy21 plan outlines current and emerging initiatives according to the strands in the 2010 National Education Technology Plan, "Transforming American Education: Learning Powered by Technology," and it directly connects to the district's Vision 2020 strategic plan and goals.

In the Newton Public Schools, technology is a critical component of a learning environment that prepares students for college and career success in the 21st century. Providing access to customized technologies that empower students to engage in learning anytime and everywhere helps close gaps in access and achievement and cultivates communication, collaboration, critical thinking, and creativity. Our technology plans are designed to build and support the infrastructure on which the school system will strive to accomplish its vision and goals.

New and emerging technologies can enable innovative education in an excellent, up-to-date learning environment for all students. Our Literacy21 plan is driven by four key concepts that are changing and improving teaching and learning:

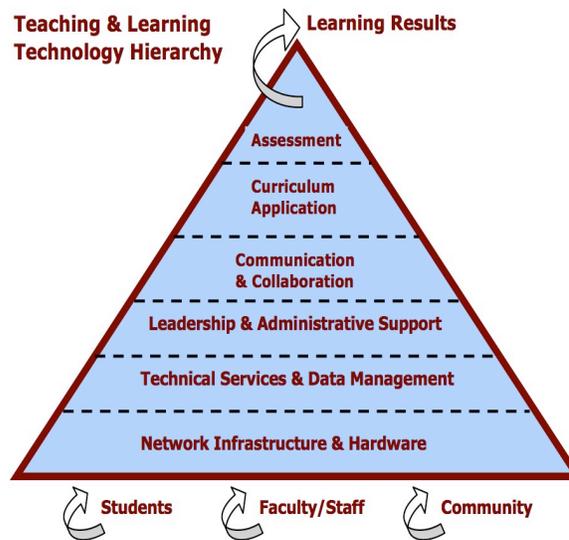
- The connection through the Internet is the invention that impacts education
- Students are creators and contributors
- Teachers and students have a globalized curriculum where students talk with each other world-wide, and teachers share and learn from colleagues anywhere
- Educators need professional community to think together and change and improve practice.

The Literacy21 plan builds on the technology goals of the previous several years, where the emphasis in particular has been:

- to build a strong, reliable, network infrastructure with the technical services to support that growing capacity
- to provide robust access to data, information and communication technology, and digital resources for students and staff through a digital learning platform
- to design and deliver job-embedded professional development on curriculum and technology integration for teachers and administrators.

Continuing to invest in robust access to digital tools and curricular resources along with strengthening educator development will ensure the efficacy and success of current projects and those on the horizon.

*Newton's Literacy21: Learning Powered by Technology* plan addresses the components of the NPS Teaching & Learning Technology Hierarchy. Goals and action plans for the three years, FY11 – FY14 are highlighted according to these interdependent components.



### **Network Infrastructure & Hardware: Access and Enable**

A robust network infrastructure, appropriate hardware, technical services and data management are components that are the foundation for teaching, learning, and leadership in the 21st century. The NPS Information Technology Team is actively engaged in developing a strong infrastructure for learning that will unleash new ways of capturing and sharing knowledge based on multimedia that integrate text, still and moving images, audio, collaboration, and applications that are accessible from numerous kinds of devices. To organize this infrastructure of resources and collaboration for both professional activities and interaction with learners, will require the scalability of a sophisticated digital learning platform. This platform will enable seamless integration of in-school and out-of-school learning by providing access to the resources anytime and anywhere.

This infrastructure will require the upkeep of existing internal high speed networks, updating of our district-wide network, and expansion of our wireless access district-wide while we maintain the current access to desktop and laptop devices. The use of wireless devices, both school-owned and personal, is wide-spread and growing within our schools. In conjunction with our internal and external data resources, this infrastructure will require a robust and flexible pipe to the Internet, giving our learning community access to the ever-growing content available around the globe.

A main focus of our current work has been for each classroom to meet a new technology standard that includes being equipped with projection or display systems multimedia/sound field audio, and document projection/capture capabilities. These technologies will allow our teachers to enhance instruction in the classroom and enable teachers and students to use a digital learning platform and the multitude of educational web resources.

**Year 2011-2012**

- Add wireless access capacity to Newton North and South High Schools.
- Upgrade internal network infrastructure at Newton North to 10G.
- Update middle school teacher laptops.
- Update Special Educator laptops K-8.
- Continued the renovation of the district website.
- Begin the design of the new Wide Area Network (WAN) in conjunction with the City IT Department.
- Assess current state of hardware district wide and begin planning updating and upkeep over time.
- Upgrade the operating system and increase RAM on approximately 900 teacher and student Macbooks and iMacs to meet the new standard of OS 10.6 or higher and 2GB.
- Research the increase to Internet bandwidth district wide.
- Establish new standards for classroom technology to support integration.
- Deploy mobile device management for district owned devices including iPads.
- Update the World Language Lab at Newton South High School.
- Update classroom and student access to technology at all middle schools.
- Update classroom and student access to technology at 8 elementary schools.

**Year 2012-2013**

- Expand the capacity of the middle school networks to support 10G connectivity to the district WAN (wide area network) and to support robust wireless access.
- Install new wireless network at the middle schools to support 2.5 wireless devices for every person operating in the building.
- Support the city-wide fiber installation project.
- Update K-3 teacher laptops district-wide.
- Expand student access to laptop/desktop technology at the middle schools.
- Update classroom projection systems at Newton South High School.
- Update lab and library computers at Newton South High School.
- Update Special Ed classroom computers at Newton North High School
- Complete the outfitting of Newton South High School classrooms with document cameras.
- Complete the outfitting of elementary classrooms with projection and document camera systems.
- Redeploy upgraded teacher computers for student/classroom access.
- Install interactive technology in school libraries, learning commons, and labs to engage students and teachers in interactive instruction.

**Year 2013-2014**

- Update Newton North and South High School wireless networks to support 2.5:1 devices person operating person.
- Install phase one of the media distribution system for district wide media storage and deployment.
- Continue expansion of student laptop/computers at all middle schools.
- Update teacher laptops at Newton North/South High School.

**Technical Services and Data Management**

*“Our education system at all levels will redesign processes and structures to take advantage of the power of technology to improve learning outcomes while making more efficient use of time, money, and staff. “*

*-National Education Tech Plan*

The NPS Information Technology Department is committed to supporting the efforts of the teaching and learning and operation departments to streamline the use of data collected from the numerous silos built over the last fifteen or more years. Important data is continuously collected in various data silos or products that we use within the district. Furthermore, much of the curriculum, assessment, collaboration and communication occurs in additional individual data silos. In order to centralize much of this data, and provide access to elements when needed, we have initiated projects and practices that will facilitate alignment of data district-wide.

**Leadership and Administrative Support**

As new technology tools are introduced into education, their adoption and efficacy relies on district and school leaders modeling their effective use, and supporting the investigation and experimentation of new tools and approaches in classrooms.

Research and development of technology uses for teaching and learning is paramount for finding the appropriate solutions to help ensure an effective, up-to-date learning environment. As change in technology is constant and the available time and funds to implement solutions remains limited, ongoing research, development, and evaluation are important. The NPS Information Technology Team pilots and evaluates opportunities for both instructional and operational solutions. As examples, this ongoing practice has included one-to-one access, paperless work-flow, and alternative interactive technologies. The goal of research and development is to find the best solutions for our learning communities K-12 and scale effective practices to appropriate areas.

The NPS IT Team will continue to explore one-to-one computing solutions to provide access to current and future digital resources, including the early stages of implementing a digital learning platform to organize and streamline access to these resources.

**Year 2011-2012**

- Researched and tested a variety of digital learning platforms for the purpose of streamlining curriculum development and articulation.
- Chose a digital learning platform and began to design the implementation of a digital learning platform, called “ourNewton,” with curriculum administrators and lead teachers.
- Continued to use and evaluate interactive white boards and response systems in selected locations.
- Began investigation of alternative interactive classroom models. (Interactive projector, Apple TV, LED Technology)
- Deployed and supported iPad installations in various classrooms to measure their efficacy in different learning environments.
- Investigated and began small deployment of digital archiving and paperless work-flow of records.
- Tested media archive and deployment solution to provide anywhere anytime access to video media for curriculum district-wide.
- Piloted cloud-based personal document solutions to provide synchronized access to documents anywhere anytime for learners and professional staff.
- Provided all curriculum administrators and middle and high school principals with iPads to explore productivity applications and digital content and texts.

**Year 2012-2013**

- Continue to implement OurNewton, our digital learning platform.
- Enhance the role of K-12 library teachers and instructional technology teachers in the training and piloting of OurNewton, to guide and support teachers in the development of curriculum materials and resources.
- Expand the Learning Commons concept to the elementary level and develop a baseline standard to migrate all school libraries towards implementing the philosophy.
- Evaluate each library space for specific needs to enhance the physical space and facilitate its’ use as an innovation and communication space.
- Expand the deployment and evaluation of iPads Carts in classrooms and for administrators.
  - Provide coaching and mentoring in the use of iPads and other handheld devices
  - Evaluate and recommend iPad apps that support teaching and learning in all content areas and grade levels.

- In collaboration with curriculum coordinators, department heads, and classroom teachers, evaluate the purchase of eBooks (district-wide license) to form a core collection throughout the district in support of specific curricula.
- Establish a standard video production tool and instruct students in using the tool to create Book talks/Book Trailers to promote free and independent reading and use of library resources, as well as to express their comprehension and understanding of text.

**Year 2013-2014**

- Continue to implement OurNewton, our digital learning platform.
- Continue to collaborate with curriculum coordinators, department heads, and classroom teachers to evaluate the use of digital resources.
- Continue the iPad and hand-held device deployment based on previous research and development.
- Continue to develop the Learning Commons Model.
- Continue to support the role of the K-12 library and instructional technology teacher in the implementation of OurNewton.

**Communication, Collaboration, and Professional Development**

*“The best way to prepare teachers for connected teaching is to have them experience it”*

*-National Education Tech Plan*

The NPS Information Technology department will continue to support teachers and administrators with a variety of professional development opportunities and models. Instructional Technology and Library Media teachers will help connect teachers to the resources and data they need when they need it. We will continue to offer formal face-to-face and blended learning opportunities. Training in specific technologies will be provided for small groups or individuals. Staff will continue to provide just-in-time coaching opportunities that support teachers and administrators as they take on new challenges integrating technology into teaching, learning, and daily life in the schools.

**Year 2011-2012**

- Continued the implementation and support of Google Docs district-wide.
- Designed and began the initial professional development for OurNewton.
- Continued the support of the interactive classrooms district-wide.
- Supported the integration of digital citizenship and cyber-safety curriculum district-wide.
- Continued the integration of Web 2.0 tools into all curriculum areas.
- Continued to support staff and administration in effective use of the current data systems.

- Began to leverage the use of webinars with Adobe Connect..

**Year 2012-2013**

- Continue all of the above professional development support.
- Expand the support for teachers to document and share effective practices in OurNewton.
- Provide professional development for elementary staff in implementing project based learning in the library media center in collaboration with the classroom teacher and Instructional Technology Specialist.
- Provide just-in-time collaboration, coaching and modeling of technology integration for students and teachers in accordance with the grade-level Common Core Standards and National Educational Technology Standards (NETS)
- Provide ongoing Technology in Practice (TIPs), both building-based and district-wide, to offer teachers flexible Professional Development and provide just-in-time coaching and collaboration.
- Provide coaching and modeling of the resources and tools in OurNewton, including the new Professional Development catalog, curriculum maps and curriculum unit repositories.
- Update the following district policies: Web Publishing, Student Acceptable Use, Employee Acceptable Use, Social Networking and the Confidentiality.

**Year 2013-2014**

- Continue all of the above professional development support.
- Begin to develop and foster more personalized learning experiences including ePortfolios and Individual Learning Plans in OurNewton.
- All Newton employees will become familiar with the following district policies: Web Publishing, Student Acceptable Use, Employee Acceptable Use, Social Networking and the Confidentiality.
- OurNewton will become the new norm as our instructional communication and curricular development platform.

**Curriculum Application and Assessment**

*Literacy21: Learning Powered by Technology* articulates how technology is continuing to help improve and shape curriculum application, assessment strategies, instructional practices, access to curricular resources, professional learning, and communication and collaboration. Stable and robust access for all students and staff, in conjunction with a multi-faceted digital learning platform, OurNewton, will ensure we are building the supportive foundation for this up-to-date learning environment that will deliver the results of improved student learning.

## Literacy21 Budget Overview FY11 - FY14

The NPS Information Technology Department FY11 budget is approximately \$5.400,000 per year, \$4.3m of the budget is for salaries. The remaining budget is allocated in the 18 line items below. The next four largest allocations are for Repair and Maintenance (Admin R&M=35%), Instructional Hardware (27%), Administrative Hardware (Admin Hardware = 11%), Instructional Software (8%). This year Professional Development is 5%.

The Budgetary Initiative matrices outline targeted projects for each year of the plan. Many of the budgetary initiatives in the matrices are consistent with the objectives listed in the narrative section of the plan. Some of the budgetary initiatives in the matrices are part of the district's operational requirements. The operations budget will be used to accomplish some of the objectives in each year of the plan, but will need to be subsidized by other funding sources.

When our network and hardware infrastructure meets the required standard to ensure updated learning environments, ongoing maintenance to the system is projected to require approximately an additional \$1.5m each year. This \$1.5m will ensure appropriate replacement and maintenance of laptops and mobile devices, network hardware, data systems, and services.

### Information Technology Department line items

|                              |                       |
|------------------------------|-----------------------|
| Admin R & M                  | \$370,000.00          |
| Admin Software               | \$44,100.00           |
| Admin Hardware               | \$117,749.00          |
| Computer Supplies            | \$16,000.00           |
| Dues/Subscriptions           | \$1,250.00            |
| Professional Development     | \$55,000.00           |
| Consultant                   | \$5,000.00            |
| Internet Access              | \$24,000.00           |
| Instructional Software       | \$81,393.00           |
| Instructional Hardware       | \$267,850.00          |
| Instructional Supplies       | \$4,000.00            |
| Refreshments                 | \$300.00              |
| Library Materials            | \$29,300.00           |
| Library Dues & Subscriptions | \$800.00              |
| Office                       | \$3,000.00            |
| Printing                     | \$1,000.00            |
| Summer Intern                | \$36,610.00           |
| E-Rate Consultant            | \$15,950.00           |
|                              | <b>\$1,073,302.00</b> |

Chart I - Total Operating Budget: \$5,443,801

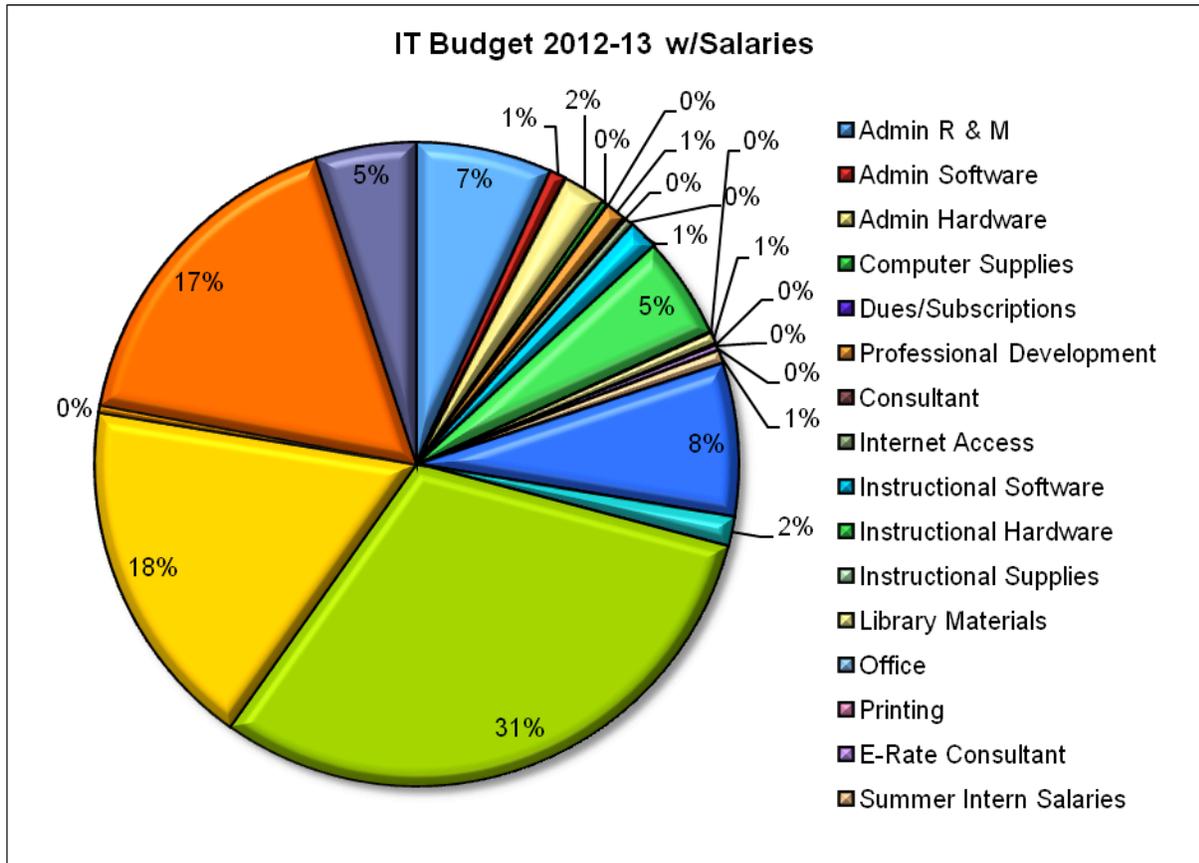
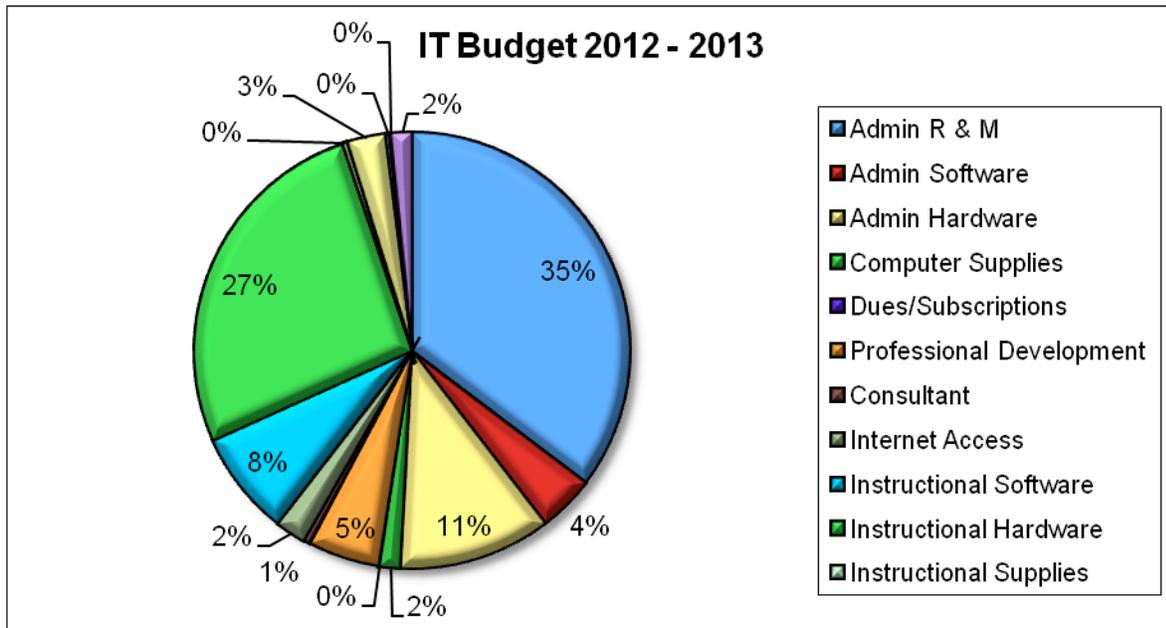


Chart II - Operating Budget Without Salaries: \$1,073,302



**Budget Initiative Matrices**

The following three matrices outline the four major budget categories (infrastructure, student access, teacher/classroom/administrative access, professional development) and district levels.

**Budgetary Initiatives 2011-2012**

Total \$1,050,000

| Level           | Infrastructure   | Student Access   | Teacher/Classroom/Admin Access   | Professional Development   |
|-----------------|--|--|--|--|
| NNHS            | Augment wireless access coverage to support increased number of iPads and laptops.   | Maintain student access with upgrades and updates.                                       | Maintain teacher access with upgrades and updates.   | Interactive Classroom Tools<br>Google Docs/Web 2.0   |
| NSHS            | Updated Internal network to 10G backbone and 1G to client. (250K)<br>Updated WAN connection to 10G (10K)<br>Augment wireless access coverage to support increased number of iPads and laptops. | New Language Lab Computers. (40K)  |  | Google Docs/Web 2.0<br>Interactive Classroom Tools   |
| MS              |  | Pilot iPads carts as portable lab option. (68K)<br>Updated lab/library computers. (100K) | Update SPED Teacher Laptops.<br>Updated Grade 7,8, ELL, specialist teacher laptops. (250K)   | Google Docs/Web 2.0<br>Interactive Classroom Tools   |
| Elem            | Augment wireless access coverage to support increased number of iPads and laptops.   | Expand Student access through portable labs. (100K)                                      | LCD Projectors/Doc Cameras for classrooms. (30K)<br>Update SPED Teacher Laptops<br>Update portable laptop carts for classrooms and labs. | Google Docs/Web 2.0<br>Interactive Classroom Tools   |
| District Wide   | Begin Paperless Infrastructure<br>Expand District Storage Capacity. (20K)<br>Update Network/Head End at Ed Center. (100K)  | Upgraded memory/OS for (900) laptop/desktops to add to life span.(17K)                   | Upgraded memory/OS for (900) laptop/desktops to add to life span.(10K)   | Continue the building of staff skill sets in the use of productivity and media tools.<br>Google Doc/Web 2.0 Training (55K) |
| Estimated Total | \$380,000  | \$317,000  | \$290,000  | \$55,000   |

**Budgetary Initiatives 2012-2013**

Total \$2,569,000

| Level           | Infrastructure   | Student Access  | Teacher/Classroom & Administrator Access                      | Professional Development  |
|-----------------|--|---|---|---|
| NNHS            | Implement Cisco ISE (Identity Services Engine)   | Maintain student access with upgrades and updates. (40K)                                    |   | Google Docs/Web 2.0<br>Interactive Classroom Tools<br>OurNewton - curriculum  |
| NSHS            | Implement Cisco ISE (Identity Services Engine)   | New Language Lab (40K)<br>Update lab and library computers.<br>Laptop/Desktop Update (270K) | New Classroom LCD Projectors (157K)<br>Document Cameras (36K) | Google Docs/Web 2.0<br>Interactive Classroom Tools<br>OurNewton - Curriculum  |
| MS              | Internal Wired/Wireless Network Update (650K)<br>-Connect each middle school building to the Ed Center over single fiber at 10G. (20K)   | Pilot iPads in Grade Six 21st Century Pilot. (30K)<br>Student Computers/Laptops (321K)      | Document Cams (83K)<br>LCD Projectors (13K)                   | Google Docs/Web 2.0<br>OurNewton - curriculum<br>Interactive Classroom Tools  |
| Elem            | Expand wireless Access to complete coverage (20K)  | Expand Student access through portable labs.<br>Laptop/Desktop Updates.(210K)               | Document Cams (13K)<br>Replace K-3 Teacher Laptops (240K)     | Google Docs/Web 2.0<br>OurNewton - curriculum<br>Interactive Classroom Tools  |
| District Wide   | Citywide Fiber Project (1M)<br>Learning Management System. (16K)<br>Begin Paperless Infrastructure roll out. (20K)<br>Expand District Storage Capacity.(20K)<br>Upgrade MS Office on District Computers 2010/11 (50K)<br>Expand online library catalogue allow student accounts. (10K) |   |   | Continue the building of staff skill sets. (productivity and media tools.)<br>Google Doc Training<br>Expand on the use of Our Newton's resources including the Learning Management System. (100K) |
| Estimated Total | \$806,000  | \$1,121,000   | \$542,000   | \$100,000   |

**Budgetary Initiatives 2013-2014**

Total \$1,966,000

| Level           | Infrastructure   | Student Access  | Teacher/Classroom Admin Access            | Professional Development   |
|-----------------|--|---|---|--|
| NNHS            | Update Wireless to support 2.5:1.(200K)  | Laptop/Lab upgrades and updates.(120K)  |   | Google Docs/Web 2.0<br>OurNewton - curriculum and blended learning<br>Interactive Classroom Tools  |
| NSHS            | Update Wireless to support 2.5:1.(200K)  | Laptop/Lab upgrades and updates.(100K)  | Teacher Laptop Update(260K)               | Google Docs/Web 2.0<br>OurNewton - curriculum and blended learning<br>Interactive Classroom Tools  |
| MS              |  | Proposed Grade 7 1:1 (500K Not included in total)<br>Student Computers/Laptops (321K) |   | Google Docs/Web 2.0<br>OurNewton - curriculum and blended learning<br>Interactive Classroom Tools  |
| Elem            |  | Laptop/Desktop Updates.(210K)   | Library/Lab Interactive Technology. (55K) | Google Docs/Web 2.0<br>OurNewton - curriculum and blended learning<br>Interactive Classroom Tools  |
| District Wide   | Replace the Chancery SMS database server.<br>Continue build out of disaster recovery services.(100K)<br>Begin Phase one of Media distribution head end. (300K) |   |   | Continue the building of staff skill sets in the use of productivity and media tools.<br>Google Doc Training<br>Expand the use of OurNewton's resources including the Learning Management System. (100K) |
| Estimated Total | \$800,000  | \$751,000   | \$315,000                                 | \$100,000  |

**Resources and References**

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