

Technology Vision and Plan

Greater Johnstown School District

2008-2011



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Greater Johnstown School District
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INTRODUCTION

“School boards are focusing a great deal of attention on technology and finding ways for administrators, teachers and students to make the best use of digital resources to improve student performance. The biggest challenge is getting everyone to stop seeing technology as one more thing they need to add on, an adjunct rather than a part of the learning process.”

The CEO Forum School Technology and Readiness Report. The Power of Digital Learning: Integrating Digital Content. June 2000. Available at www.ceoforum.org

“After more than two decades of research on the benefits of educational technology, evidence that demonstrates the positive effects technology can have on student achievement is mounting. Specifically, studies have shown that large-scale statewide technology implementations have correlated use of technology with increases in student performance on standardized tests.”

Margaret Honey. Great Expectations—Leveraging America’s Investment in Educational Technology, EDC Center for Children and Technology, 2002.

“We recognize that we are calling on schools to change dramatically even as they face difficult economic challenges and a vigorous discussion of student achievement and assessments. However, while current budget constraints eventually will subside, the long-term need for 21st century learning will not: Accelerating technological change, rapidly accumulating knowledge, increasing global competition and rising workforce capabilities around the world make 21st century skills essential.”

Learning for the 21st Century. Partnership for the 21st Century. Available at www.21stcenturyskills.org

“You may have the best computer, the most sophisticated curriculum software, and the fastest Internet connection. . . . But if that teacher doesn’t know how to use any of that, it’s not going to improve education.”

John Bailey, Director of Technology—US Department of Education

“There is general agreement that computing technologies have not had a significant impact on teaching and learning in K-12 in the U.S. even though billions of dollars have been spent in purchasing, equipping, and supporting the technology. Some critics of school technology use this situation to push their position that technology is not appropriate for children. Others put the failure on the backs of classroom teachers. However . . . the reason there has not been an impact of technology is that students have actually, for all intents and purposes, not used the technology. And, the reason for this non-use lies not at the feet of the teachers, but rather in the very real lack of access to technology, e.g. having one computer in the classroom is not access nor will it lead to significant student use. Frankly, there can’t be an impact of technology if children have not had the opportunity to access and use the technology.”

Norris, Sullivan, and Soloway. No Access, No Use, No Impact: Snapshot Surveys of Educational Technology in K-12 from the *Journal of Research on Technology in Education* Volume 36, Number 1, Fall 2003.

**Greater Johnstown School District
Technology Vision and Plan
(2008 – 2011)**

I. Goals and Visions

A. *Present Context*

A great deal has already occurred with technology in the Greater Johnstown School District. A number of external and internal factors are driving the need to revise the District's current Technology Plan, including the completion of a network data center to consolidate all voice and data services for the district. This document outlines a revised technology plan for the district reflecting these factors. This technology plan revision does not take place within a vacuum. It is important to understand that this plan builds on and updates the prior District Technology Plan last revised in 2005. This plan is not a radical departure, but an attempt to continue the many good things planned and implemented over the past three years. Technology planning takes place within other important contexts, including the technology planning requirements now established at both the state and federal level (which includes E-Rate program requirements and Title II - No Child Left Behind (NCLB) requirements). This plan is intended to address all those requirements.

The New York State Education Department has released a draft statewide technology plan that includes goals and objectives for local educational authorities. Goal five identifies the need for each district to have a technology plan in place, as noted in Appendix A.

B. *Our District's Mission*

The Mission Statement of the Johnstown School District reads as follows:

The Johnstown School District will provide all students with the academic, problem-solving and technological skills essential for personal development, responsible citizenship, and life-long learning.

C. *District Learning Goals*

We expect our students to be:

- ✓ Creative thinkers who can reason, reflect, make decisions, solve complex problems as well as support and defend their solutions
- ✓ Responsible, self-directed learners who can set and prioritize goals, monitor and evaluate progress, use information resources and emerging technologies, and adapt to change
- ✓ Effective and creative communicators who use a variety of skills to receive and express concepts and ideas

- ✓ Informed and responsible citizens who contribute to their school community, their country, and their world
- ✓ Collaborative workers who can demonstrate responsible cooperation and leadership within groups to accomplish a common goal
- ✓ Quality producers whose work reflects high standards, originality, and unique abilities

D. Educational Technology - Vision Statement

Background

The Greater Johnstown School District is committed to using technology to help our students become competent, successful adults. We also know that a well-developed and well-supported technology infrastructure will help prepare our students for the many challenges they will face in the current and future economies, and increase the possibility that they may be able to find opportunities which will allow them to remain members of the Greater Johnstown community well beyond their years of schooling.

We support the concepts reflected in the national 21st Century Skills Partnership initiative as the basis for the skills with which we want all our young people to graduate from our schools (www.21stcenturyskills.org). We believe that preparing our students through the use of information and communications technology (ICT) is critical to their success in our society. These technologies include computers, networked information, the Internet, and all varieties of electronic media and tools.

Our belief is that technology's potential for students, teachers and administrators should be reflected in the following types of digital technology applications:

- ✓ Collaborating
- ✓ Communicating
- ✓ Accessing information, instructional resources, and lessons
- ✓ Teachers and students using productivity and presentation tools.
- ✓ Making decisions based on information
- ✓ Representing and presenting data in graphical forms
- ✓ Adapting to the special individual needs of learners, as well as using technology for special programs such as Academic Intervention Services (AIS), English as a Second Language (ESL), and enrichment
- ✓ Individualizing learning to address all learning styles
- ✓ Creating and using multimedia presentations that can address different learning modes
- ✓ Going beyond the four walls of the school, and opening up the world through virtual field trips
- ✓ Engaging learners in discovery, project-based learning that supports a constructivist learning model
- ✓ Preparing students with the 21st century information handling skills that are necessary to function in college and in the workplace

Vision for the Greater Johnstown School District's Technology-Enriched, Electronic Learning Community

We envision that the technology-enriched learning environment in our schools will help students to achieve higher levels of academic performance, and develop new competence and pride in their work as successful communicators and thinkers in the 21st century world.

We envision our students using technology and engaged in authentic, project-based, student-centered discovery learning that enhances all the information and communications skills defined in the 21st Century Skills Project, and that helps students to meet the challenging New York State Learning Standards established for every student in the Greater Johnstown School District.

We envision our teachers teaching digital literacy skills and our students learning and using those skills (both with and without the use of technology tools) across every subject area and grade level.

We envision technology being used to adapt instruction to address the widest range of student learning styles and unique needs.

We envision that our teachers and other instructional staff will have the necessary access to appropriate technology, along with the appropriate on-going professional development necessary to integrate and use technology effectively into curriculum and instruction.

We envision our teachers and students using technology to extend learning beyond the confines of their physical classrooms and schools, in order to access resources, collaborate with other learners, and present the products of their learning experiences as participants in the global learning community.

We envision our teachers, students, and community members accessing information resources electronically at any point in time, from any location (school, home, and library).

We envision our teachers and students communicating and publishing their work, including both textual and multimedia productions, electronically via the District's web site for widespread access.

We envision that information and communications technologies, along with a wide range of evolving electronic and multimedia tools, will be fully integrated into our curriculum and instruction, and be fully tied to national, state, and local learning standards.

We envision information technology being used to help increase staff productivity, to track student academic progress, and to support informed decision-making related to students programs and budgets.

Technology-Enhanced Learning Environment

We envision the physical learning environment of the Greater Johnstown School District to include the following:

For our schools:

- ✓ Powerful network infrastructure throughout each building (supporting data, voice, video, security, and access control) with requisite space allocation for wiring closets and power and cooling for systems, as well as appropriate systems software for security and Internet filtering
- ✓ High-speed fiber wide area network (WAN) connectivity between buildings, linked to a network operations center with centralized resources and connectivity out to the Internet
- ✓ Appropriate wireless access throughout each building, providing connectivity from any location
- ✓ Access to appropriate server and application resources
- ✓ Access to relevant curricular content, general software tools, content specific software, and electronic references and resources from anywhere in the network
- ✓ A school library/media center in each building, with access to all district library resources electronically
- ✓ Access to telephone services in each classroom and instructional space
- ✓ Access to a wide range of computer peripherals including:
 - Display/presentation technologies (e.g. LCD projectors)
 - Specialized interactive white boards in selected labs and other shared-group spaces
 - Digital cameras, video cameras, large format printers
 - Scanners
 - Wireless keyboards and mice for presentation
 - Digital color copier/printers
 - Handheld devices
 - Interactive video conferencing and distance learning systems on carts available for classroom use
 - Specialized curriculum specific peripherals, including:
 - Science probes
 - Microscope attachments
 - Graphing calculators
 - Keyboards and sequencers
 - Graphics tablets
 - Hand-held devices including graphing calculators (including a program to provide graphing calculators for needy students)
 - Specialized adaptive devices and assistive technologies to meet student needs
- ✓ Appropriate electrical power to support technology in all instructional locations
- ✓ Adequate space for technology throughout the building, including classrooms and computer labs
- ✓ Appropriate cabling to support security cameras and access control points throughout the buildings at strategic points

For Our Classrooms:

- ✓ Teacher location – preferably with two network connections
- ✓ Student use (in addition to the teacher connections):
 - At the elementary level, four network connections for students in each classroom
 - At the middle school level, four network connections for students in each classroom
 - At the high school level, two network connections for students in each classroom
- ✓ Multimedia computer and large display projection access in each building

- ✓ Work group printers (clustered at least by building floor), with the printer on the network, but not located in each classroom, to save money
- ✓ Printers in each computer lab, and provided as necessary for confidential printing by counselors, special education staff, and administrators
- ✓ Access to a wide range of software applications:
 - Generalized software tools for Internet, communications, as well as text, image, and multimedia video and sound processing
 - Specialized curriculum-specific software
- ✓ Access to Internet, streaming media, educational video, and library resources in selected areas
- ✓ Appropriate furniture and mountings for computers and presentation/display devices in all rooms. Furniture arrangement patterns must be flexible and reflect the kinds of instruction that take place in the room. Consideration will be given to low profile form-factor systems to be used in new implementations and to maximizing space through the use of LCD panels rather than CRT monitors.

Infrastructure

Basis

The District's infrastructure is based upon managerial and educational needs. It is critical that preserving the investment in this infrastructure is maintained. The following details the core elements.

- ✓ A stable technological environment
- ✓ Managed costs through centralized control adhering to industry standards
- ✓ Provisions for expandability of the design for future environments
- ✓ Allocation techniques to support present and future applications including Internet, video and multi media interactive technology as well as planned expanded bandwidth to support teaching and learning
- ✓ Support for all programming in the District, including administrative and educational applications, which will allow a full range of technology capabilities, and resources that will enhance the effectiveness for the Greater Johnstown School District.

Network Infrastructure Components

The infrastructure graphic is attached in Appendix B, which supports the vision of an interconnected learning community

II. Professional Development Strategies

A. Present Uses of Technology for Teaching and Learning

Our vision is to integrate technology within the teaching and learning process in a way that truly benefits all our students. At present, groups of teachers at all levels are using technology. The following are specific technology uses identified by individual staff members via a survey conducted in October of 2003, a survey conducted in November of 2004 and through discussions with teachers.

Johnstown High School

- ✓ Art history classes - all students send homework via e-mail

- ✓ Inspiration, MapMaker, TimeLiner 5.0 and PowerPoint being used by teachers
- ✓ Software included with textbooks are being used to create worksheets and tests
- ✓ Class completes Internet assignments and WebQuests
- ✓ Students use Regents Prep Programs (NYS Regents Site)
- ✓ Robolab being used
- ✓ Maple Software being used in Math
- ✓ Students programming in C++ and Basic
- ✓ Adobe Photoshop, digital cameras, and scanners used in desktop publishing and digital imaging
- ✓ schooll**tool**™
- ✓ Excel
- ✓ Search for library books and resources
- ✓ CISCO
- ✓ Social Studies/ELA Presentations
- ✓ United - streaming

Knox Junior High School

- ✓ Geometer's Sketchpad used for demonstrations
- ✓ Microsoft Office used to prepare worksheets
- ✓ Saxon Test Generator used for additional support and worksheets
- ✓ Software Tools used in Tech 7 curriculum
- ✓ Music web sites used
- ✓ www.schoolnotes.com used
- ✓ Cisco management classes
- ✓ Search for library books and resources
- ✓ PowerPoint
- ✓ Excel
- ✓ schooll**tool**™

Pleasant Avenue, Jansen Avenue, Glebe Street and Warren Street Elementary Schools (selection of programs by building may vary but most are available in all buildings)

- ✓ PowerPoint, GraphClub and Inspiration used with students
- ✓ Research on Internet for thematic units and teacher resource sites
- ✓ Hooked on Phonics
- ✓ Preview of Scholastic News Articles
- ✓ Book reports, I-Spy and social studies/library research on Johnstown local history via Internet
- ✓ Accelerated Reader
- ✓ WiggleWorks, Word and Paint
- ✓ Microsoft Word for spelling practice
- ✓ Internet teaching sites
- ✓ E-class
- ✓ Math web sites
- ✓ UltraKey
- ✓ WMHT—United Streaming video resources
- ✓ Physical Education web sites
- ✓ Use of mobile station
- ✓ schooll**tool**™
- ✓ Excel
- ✓ Internet used for student research for special projects
- ✓ www.starfire.com/workbook resources

- ✓ Research, lessons, art ideas, typing up lessons, and poetry
- ✓ WebQuest and ThinkQuest
- ✓ Saxon Web site and Starfall web site
- ✓ Fun school, Clifford and NYS Reading Academy
- ✓ Create parent newsletters on computers
- ✓ Reader Rabbit
- ✓ Multiplication practices
- ✓ Rubric generation

The specific needs expressed by staff for additional or new technology resources/capabilities included the following:

Critical reading and instruction

1. Individualized tutorial instruction for study skills, time management, reading comprehension and writing skills
2. Support resources for foreign language grammar and reading comprehension
3. Probes for science lab stations, in conjunction with computerized lab stations
4. Mobile presentation systems for teacher PowerPoint
5. White boards
6. Graphing calculators with overhead projectors for mathematics
7. Upgrading AutoCAD
8. Additional support resources for AIS
9. Ensuring that all computers are fully operational, all the time
10. More LCD projectors
11. Additional graphics programs such as PaintShop Deluxe and Print Artist for classroom posters
12. Ability to create teacher web pages and save those pages on the school server
13. Having WinSchool automatically create reports when student have too many absences or are tardy too often, rather than requiring teachers to individually calculate the absences and create hand-written memos.
14. E-Class grade refresher course for all aspects of the program

Additional Ideas:

- ✓ Extend the use of Excel for graphing
- ✓ Demonstrate the power of Kidspiration and Inspiration across all grades and subject areas
- ✓ Create a web-publishing/communications class
- ✓ Create a video communications/digital graphics class

B. Needs Assessment – Goals Based on Priority Needs

Based on a review of the current technology plan, discussions with staff, feedback from all technology committee members, as well as a review of the technology assessment data available, we have established the following priority goals for action under this plan. These priority goals, which support the District's mission, are as follows:

1. Increasing 21st century digital literacy skill of students at grades 5-12, including abilities to research information, select, evaluate and communicate information, as reflected in the 21st Century Partnership (www.21stcenturyskills.org).

2. Increasing teacher skills and ability to enhance lessons through the use of a multimedia presentation system on a cart with multimedia computer, VCR and LCD projector.
3. Increase student skills and achievement in English and Language Arts (especially reading and writing) through the use of technology such as the Internet, Word Processing, PowerPoint, video product, web publishing (as well as new applications to be identified).
4. Improve understanding of mathematical concepts and relations by students through the use of graphical representation software such as Excel, GraphClub, Maple, Geometer's SketchPad (as well as new software), in conjunction with the use of interactive whiteboards.
5. Supporting hands-on science through the use of probes and graphical presentation software.
6. Helping to support and supplement classroom instruction and overall student learning through the use of computer-based tutorials and on-line resources focused on student study skills, time management, and other foundation skills.

C. *Alignment Between National, State, and Local Standards*

The International Society for Technology in Education (ISTE) has released a set of national educational technology standards for pre K-12 students, through its National Educational Technology Standards (NETS) Project. These standards have the support of the U.S. Department of Education, as well as the New York State Education Department, and many other organizations. The standard and detailed profiles are available in electronic format at <http://cnets.iste.org>.

These technology standards reflect the goal of integrating technology into teaching and learning across all instructional areas. The six categories around which these technology standards are written include:

- ✓ Basic Operations and Concepts.
- ✓ Social, Ethical, and Human Issues.
- ✓ Technology Productivity Tools.
- ✓ Technology Communication Tools.
- ✓ Technology Research Tools.
- ✓ Technology Problems Solving and Decision Making Tools.

The table in Appendix C provides one way to organize the performance indicators for students at each of three levels: elementary, middle, and high school. These statements are taken from the NETS lists for each category, with some of the redundancies removed across categories. These standards provide the framework for Greater Johnstown's technology initiatives, and provide the standards linkages with all subject area standards.

Also in Appendix C a scope and sequence for library media skills is found. As much as appropriate, the use of technology is interwoven. (See chart)

D. *Professional Development Focused on Technology Integration*

On-going professional development is critical to effective integration of technology and ultimately to improving student achievement. Greater Johnstown has implemented

professional development programs that focus on a strong, standards-based curriculum and remain consistent with the goal of training and supporting teachers in the use of technology. The District has and will continue to offer a wide range of courses for teachers either directly or through BOCES. We believe we will need to continue to offer staff development in a number of the tool software packages. We believe that professional development must help to move all teachers through the six stages reflected in the Apple Classroom of Tomorrow (ACOT) research (Sandholtz, Ringstaff and Dwyer, 1997). These six stages of comfort and use of technology (along with a brief description of what each stage means for a teacher) are:

1. Awareness - I am aware that technology exists but have not used it, perhaps I am even avoiding it.
2. Learning the Process - I am currently trying to learn the basics. I am sometimes frustrated using computers. I lack confidence when using computers.
3. Understanding and Applications - I am beginning to understand the process of using technology and can think of specific tasks in which it might be useful.
4. Familiarity and Confidence - I am gaining a sense of confidence in using the computer for specific tasks. I am starting to feel comfortable using the computer.
5. Adaptation to Other Contexts—I think about the computer as a tool to help me and am no longer concerned about its as technology. I can use it in many applications and as an instructional aid.
6. Creative Applications to New Contexts—I can apply what I know about technology in the classroom. I am able to use it as an instructional tool and integrate it in many applications and as an instructional aid.

The Greater Johnstown School District offers professional development to help teachers move through the six stages in order to become more comfortable with and more capable of integrating technology into teaching and learning. Professional development focuses first, on an understanding basic operation of the technology/computer, including mouse, keyboard, file handling, printing, and network-based log on and access. This is basic training intended to make teachers comfortable with the computer and competent in its use within the Greater Johnstown School District system.

E. Professional Development Support of Teachers

Research has demonstrated that the teacher is the most critical variable in the successful use of technology in the classroom, not the hardware or software used. Therefore, Greater Johnstown School District believes it is important to address the factors that can determine a successful professional development program focused on the integration of technology.

These factors include:

- ✓ Ensuring a facility for group training staff. This will be accomplished primarily through the computer classrooms/labs in the building. These spaces will have the most current workstations and will be able to run all the district's standard software packages.

- ✓ Ensuring access to technology for teachers after training. It is important that staff not receive training until they can practice what they have learned after training. Providing ongoing training in the existing computer labs will facilitate the learning process. Having necessary software via the Internet will also assist teachers in practicing what they learn.
- ✓ Ensuring a commitment to the time necessary for teacher experimentation and preparation of lessons and examples. All learners need time to assimilate what they have learned and to apply it to their own needs. Teachers need to develop the skills and confidence needed to use new tools and new techniques.
- ✓ Ensuring that teachers have access to technical assistance and support staff after training, in order to answer questions. As teachers begin to work with the technology, they need to be able to get clarification on issues that come up in the process of experimentation.
- ✓ Ensuring that the curriculum expectations and applications of technology are explicitly identified. Teachers need to know how and where technology can support the district's vision and goals for students. The linkages of the NYS Standards and technology must be made clear for all staff.
- ✓ Ensuring that successful practices are shared with staff. Trained teachers must ensure that approaches that work are shared with staff. Selected teachers in each school will be the vehicles to providing this support.
- ✓ Ensuring that curriculum reviews and textbook selections reflect technology applications. Existing and new committees must consider technology-related components in their process, and we must ensure that this selection process is "informed" with a technology perspective.
- ✓ Ensuring that the structures are put in place to give all staff access to the training that they need, when they need it, to use technology successfully. To do this, a mechanism for regularly assessing teachers' knowledge and ability to use technology in their instruction will drive the staff development process.
- ✓ Ensuring that staff development examines the curriculum and instructional impacts of technology, including the changes brought about in classroom organization and management. Staff development must help teachers deal with all aspects of restructuring the teaching and learning environment brought about through the use of technology. Teachers need to evaluate what works and what does not work.

Implementation of certain policies and procedures will also be critical to the success of Greater Johnstown's professional development program for technology integration and use. Possible suggestions include:

- ✓ Staff development policies that address the training which teachers must have in order to receive workstations in their classroom, as well as the expectations of the School Board and the district administration relative to the use of technology to address the requirements of the Standards.
- ✓ Acceptable Use Policy for Technology and the Internet for both staff and students, as a part of the disciplinary code. An AUP is now in place, in addition to the Internet filtering implemented as a part of the requirements under E-Rate and the Child Internet Protection Act (CIPA).
- ✓ The District will build upon standards that will define a clear sequence by age/grade level of learner skills related to technology tools.
- ✓ Software evaluation and selection committee will be established.
- ✓ Policies for adding software to the network, including addressing copyright adherence.

Staff development approaches will encompass the following:

- ✓ Large group awareness sessions without hands-on computer use
- ✓ Workshops for staff in the computer classrooms and labs involving hands-on use, with follow-up
- ✓ In-class modeling and co-teaching

F. Factor for Success - Based on the Research Related to School Use of Technology

Dr. Michael Radlick, a nationally recognized technology planner and researcher, has worked with hundreds of school districts to identify the factors identified with successful technology initiatives. During his careers at the New York State Education Department, where he served as the Director of Planning, Evaluation and Technology, and subsequent to that, Dr. Radlick has conducted research and written widely about the seven factors of successful technology projects. We believe that these factors must be addressed simultaneously throughout the district if the overall technology initiative is to succeed.

For educators to be successful in implementing technology in their classrooms, the evidence from Dr. Radlick's research demonstrates that schools have to:

1. Establish a clear, shared vision of technology, along with a multi-year plan and detailed technology budget focused on teaching and learning.
2. Establish an infrastructure to support teaching and learning, as well as to provide a reasonable level of access for all.
3. Integrate technology into curriculum, instruction and assessment.
4. Build administrative leadership and community support for technology.
5. Make changes in classroom organization and teaching strategies.
6. Provide on-going staff development in the appropriate uses of technology, focused on integrating technology in curriculum and instruction.
7. Address requirements for technical support and maintenance of systems.

These seven factors of successful technology implementations are discussed in various documents developed by Dr. Radlick, including his paper to the New York State Board of Regents in 1994 and his chapter on technology in the book *The Superintendent of the Future*, Aspen Press, 1998. The following provides additional detail on some of these factors:

Shared Vision of Curriculum, Instruction and Assessment Using Technology

The school community must agree on a clear purpose for the investment in technology. They must envision what learning will look like in the new environment, how and where technology may best be used, and what changes may occur in both teaching and learning. Successful implementations set realistic goals for a vision of changing classroom practices and changing expectations for student performance.

Realistic Financial Planning and Budgeting

Successful school districts plan not only for the hardware and infrastructure costs, including upgrading systems, but also for the on-going maintenance costs, increased material consumption costs and for additional professional development support costs. Many successful schools leveraged both district and grant funds to support areas of implementation along with E-Rate, capital aid and BOCES aid, if applicable.

Leadership

Experiences from successful districts and on-going research on education reform indicate that technology must be embraced and supported throughout all levels of the district leadership, including administrative leaders, instructional leaders and community leaders. This includes a willingness to use the technology itself, to participate in professional development, and to provide support and resources as teachers struggle with classroom implementation.

Infrastructure

The overall plan for infrastructure must support reliable and equitable access to information and other learning resources from all instructional and administrative areas within a school building and between all school buildings. It must also include secure Internet access and access from home by students and staff after school hours. The most successful projects have a mix of different technology settings and are designed and built to accommodate high bandwidth application growth requirements for the next five to ten years.

Integration of Technology into the Classroom

Experience from successful districts shows that a strong focus on integrating technology into the teaching and learning process is ultimately the *raison d'être* of any technology plan. Any school that focuses on using technology for its own sake will never see significant changes in learning. Only when the technology is selected for its unique contribution to the subject area lesson, and its use integrated into what teachers and students are doing, can technology be successful. Also critical is leveraging the unique capabilities of technology to support engaged student learning that demonstrates the higher-level thinking and decision-making skills discussed in the Twentieth Century Skills Project (www.21stcenturyskills.org).

Making Systemic Changes in Organizational Structures and Administrative Systems

In order to take advantage of technology tools and resources, schools need to structure their use of data effectively including strategies for access and sharing of information to support teaching and learning. In addition, teachers must change the strategies that they use with students to leverage the best that technology can offer to learning.

Technical Support

Technology systems are increasingly complex and require a substantial amount of “care and feeding” to ensure that the system resources are available in a reliable and equitable manner. Appropriate levels of trained staff along with the appropriate system management software tools are critical to supporting large-scale systems. In addition,

help desk structures and user training must be implemented to control the total cost of ownership (TCO) associated with technology implementations.

III. Assessment of Telecommunication Services

A. Technology Assessment

It is important to understand what technology is in place (level of access), and how it is being used before establishing a plan for technology. The following table presents an inventory of computer access in the Johnstown School District. All of the listed computers are Internet ready and equipped for multimedia.

School	Computer Labs	Classrooms	Library or Media Center	Administration Office	Other
Glebe Street Elementary	25	21	8	3	2
Jansen Avenue Elementary	27	25	7	3	5
Pleasant Avenue Elementary	27	27	4	3	4
Warren Street Elementary	26	22	3	3	4
Knox Junior High School	41	230	12	5	17
Johnstown High School	60	140	6	19	
Transportation Facility				9	

Examining the total number of computers relative to the enrollment for each building, we see the following student to computer ratios.

	Enrollment	Student to Computer Ratio
Glebe Street Elementary	279	4.7 to 1
Jansen Avenue Elementary	198	3.0 to 1
Pleasant Avenue Elementary	284	4.4 to 1
Warren Street School	252	4.4 to 1
Knox Junior High School	314	3.0 to 1
Johnstown High School	620	2.9 to 1
Total	1947	3.4 to 1

Peripheral devices are available in all buildings, including printers, scanners, digital cameras, TV monitors, VCR's/laser disk players, projections devices and video cameras. As equipment is needed, a process is followed to sign out the portable equipment listed above.

School district workstations will be replaced with new workstations at a rate of 20% a year. At this rate, older workstations will be replaced within 5 years. All staff (teachers, CSEA personnel) has access to printers. All administrators and directors have printers at their workstations.

The district will be replacing aging servers that are over 5 years old with new servers, as required. Workstation monitors will be replaced with 17 inch flat screen monitors, as needed, in groups of 20 at a time. The old monitors will be put in storage and will be used to replace older in-service monitors as needed.

The District network has a fiber back bone in a Cisco environment. The only exception to this is the Bus Garage. The Bus Garage is connected to the network via a full T-1 because fiber is not available at this time.

B. Products Currently Used

At the present time, schools and teachers use a variety of programs, many of which are listed elsewhere in this technology plan (pages 8-10).

C. Acquisitions Secured

The charts in Appendix D* indicate secured acquisitions for the Network Operating Center which was completed in 2006.

D. Technical Staffing for Maintenance and Support of Systems

All staff understands the critical importance of stable and reliable systems to the effective integration and use of technology in the classroom. To ensure that systems are stable and reliable, the district is in the process of implementing a wide range of systems management procedures, as well as upgrading systems to standardize on a level of hardware that can be supported.

However, as an integral part of this plan, the district must move toward a goal of having an appropriate support staff. This goal is important to the overall success of the technology initiative. The budget reflects projects moving from the present forward over the next three years.

IV. Budget

Financial Plan and Budget

Cost and revenue figures will be developed as part of the yearly budget process. The District has constructed a Network Operating Center (NOC), a portion of which was subsidized by e-rate and supplemented with district funds.

*Estimated costs for E-rate eligible products/services are indicated in the following table:

Service or Function	Quantity and/or Capacity	Pre-discount Cost (est.)
Telecommunications Services		
Local and long distance telephone service	260 existing phone lines	\$40,000
Cellular/Paging Services	30 users	\$15,000
High Speed Access (Fiber/T-1)		\$25,000
Internet Access		
Dedicated Internet access	7 buildings	\$40,000
Internet access service routers w/firewall	7 buildings	\$5,000
Web hosting	1 domain	\$7,000
E-mail services	300 accounts	\$1,000
Internal Connections		
*Upgraded LAN/WAN network equipment	7 buildings	\$10,000
Upgraded telephone system (voicemail)	2 buildings	\$45,000

LAN and/or telephone system maintenance	7 buildings	\$15,000
Total Pre-discount Cost		\$203,000

*Estimated costs for ineligible technology support resources are as follows:

Service or Function	Quantity and/or Capacity	Budgeted Cost (est.)
*Hardware (computers and other ineligible equip.)	TBD	\$35,000
Software (ineligible)		\$30,000
Professional Development	TBD	\$5,000
Maintenance (ineligible equipment)	TBD	0
Total Support Cost (est.)		\$70,000

V. Evaluation and Accountability

Two critical questions need to be answered as this technology plan is implemented over the course of the next three years. First, to what degree have we implemented the things we planned (Put another way - How will we monitor what we planned)? Second, to what extent has the technology we implemented, and the professional development we provided, had an impact on student achievement (Put another way - How do we know the technology is working with our students)?

To address the first question, The District Technology Committee, on a yearly basis, will elicit input from staff for the purpose of evaluating district technology. District officials will review the information received from the Technology Committee to upgrade hardware, software and related needs for staff and students. The Network Administrator and Technology Committee will meet periodically throughout each school year and review and make necessary purchases to enhance the school district technology program. Building principals, on an ongoing basis, receive information from department coordinators and faculty members who then bring concerns to the Technology Committee representatives who forward this information to the Network Administrator and finally to the Business Administrator.

To address the second questions is a much larger challenge, linked inextricably with our goals and assessments. Despite the potential of technology to impact learning, technology does not guarantee improved learning. In addition, technology does not force teachers to reconsider how they teach, nor does it automatically allow students to experience new ways of learning. In order to justify the use of technology, Greater Johnstown School District must begin to examine what uses of technology are most effective and why they are effective. This is the critical evaluation question related to the use of technology. To answer this question, a variety of baseline information has been, and will continue to be collected. This baseline information defines the instructional program in terms of curricular outcomes, instructional resources used, and the types of technology used. In addition, baseline survey data will be collected on teacher skills and use of technology in their classrooms. This information is important to measure the extent that particular technologies are used, how they are used, and the perceptions of those using the technology, relative to its impact, especially on students, teachers, parents, and the community.

The district will need to establish an ongoing evaluation design to compare baseline information over multiple years and define the areas where there has been an impact in student learning and on those using the technology for teaching. The evaluation design is intended to answer the question:

Has the implementation of technology in the school changed (and hopefully improved) the level of learning for students? And, if it has changed, in what ways has it changed?

To answer this question, a variety of data about the implementation, use, and impact of technology will be collected at key time points. These time points include:

- ✓ Baseline achievement test data
- ✓ Baseline teacher surveys of use and need for training
- ✓ Yearly data

A variety of existing data and new data will also be collected over the next three years. The evaluation design includes collection of a variety of formative or process data to answer the implementation questions related to what was accomplished, by which teachers and students, and when it was accomplished. Teacher surveys will be administered periodically to collect longitudinal information about what is happening with students and teachers with respect to technology. Summative or impact evaluation will use a variety of outcome measures and instrumentation. These may include the following:

- ✓ State tests and standardized tests
- ✓ Portfolio assessments
- ✓ Assessment of student skills using technology
- ✓ Dropout rates
- ✓ Attendance
- ✓ Suspension rates
- ✓ Graduation data
- ✓ Interviews of students subsequent to graduation
- ✓ Degree of student use of the technology, as documented by teachers as well as logs from the systems
- ✓ Surveys of students and teachers
- ✓ Post graduation data 3 years of data
- ✓ Exit surveys for each professional development session

The evaluation will also examine the use of technology within the on-going curriculum, instruction, and assessment context of the Greater Johnstown School District. A key aspect of this context is the focus on the New York State Standards as the teaching and learning framework of the district. The evaluation design established to examine the impact of technology would reflect this larger effort. A sub-committee will need to be formed to define the overall evaluation design and data collection effort.

Technology Planning Requirements

State Education Department Technology Planning Requirements

The New York State Education Department has released a draft statewide technology plan that includes goals and objectives for local educational authorities. Specifically, Goal Five of the New York State Education Department plan identifies the need for each district to have a technology plan in place, as noted below:

Goal Five:

Every district will develop, implement, and evaluate a plan for technology use that:

- a) supports the achievement of high performance standards, including those for technology literacy, by all students, teachers and other education professionals;
- b) includes federally mandated protection from inappropriate materials; and
- c) ensures that every school library media center is an electronic doorway library with Internet access, library and other electronic content, and training in the use of technology.

Local Educational Agency (LEA) Objectives for Technology Planning

- 5.9 In accordance with NCLB Section 2414, each local educational agency applying for funds under this Act will submit to the State an updated local long-range strategies technology plan consistent with the objectives of the statewide educational technology plan.
- 5.10 Districts and BOCES will collaborate to ensure that district technology plans are consistent with Chapter 793 Plans.
- 5.11 District technology plans will be based on a needs assessment that a) incorporates disaggregated data; b) is focused on ensuring that all students have the opportunity to meet New York state technology standards identified in 1.1 above; and c) involves classroom teachers and school library media specialists in the development of such plans.
- 5.12 District technology plans will demonstrate how planned technology uses will support all students in achieving New York state technology standards.
- 5.13 District professional development in integrating technologies into curriculum and instruction will be high quality, intensive and sustained.
- 5.14 District technology plans will ensure that allocation of technology resources, including software and hardware acquisition and maintenance, and teacher and administrator professional development, is focused on any high need/low resource schools within that district.
- 5.15 District technology plans will focus on providing equitable technology access for all students for the purposes of: a) ensuring equity in students' learning opportunities, climate and outcomes, and b) eliminating discrepancies between building and population groups.

- 5.16 District technology plans will have in place a policy of Internet safety for minors that includes the operation of a technology protection measure for any of its computers with Internet access that protects against access to visual depiction that are obscene, child pornography, or harmful to minors; and will ensure that such technology protection is enforced during any use of such computers by minors. Further, similar protection against visual depictions that are obscene, or child pornography, must be ensured for such computers even when used by adults.
- 5.17 District technology plans will include strategies to ensure that all school library media programs achieve electronic doorway library status.

E-Rate Technology Planning Requirements

The Federal Communications Commission (FCC) recognized the necessity of thoughtful preparations for the use of these new technologies when they stipulated that requests for Universal Service Program discounts must be based on an approved technology plan [Section 254(h)(1)(B), of the Telecommunications Act of 1996, and FCC Order 97-157, Paragraph 573]. To ensure that schools and libraries are prepared to use the requested services effectively, and to make certain that students and community members experience the real benefits of the Universal Service Program, applicants must certify that their requests are based on approved technology plans that include provisions for integrating telecommunication services and Internet access into their educational program or library services. Most schools and libraries have already developed such plans and may only need to modify these existing plans slightly to conform to E-rate program technology plan criteria.

To qualify as an approved Technology Plan for a Universal Service discount as a part of the Schools and Libraries Division E-Rate program, the district technology plan must meet the following five criteria that are core elements of successful school and library technology initiatives:

1. The plan must establish clear goals and a realistic strategy for using telecommunications and information technology to improve education or library services;
2. The plan must have a professional development strategy to ensure that staff know how to use these new technologies to improve education or library services;
3. The plan must include an assessment of the telecommunication services, hardware, software, and other services that will be needed to improve education or library services;
4. The plan must provide for a sufficient budget to acquire and support the non-discounted elements of the plan: the hardware, software, professional development, and other services that will be needed to implement the strategy; and
5. The plan must include an evaluation process that enables the school or library to monitor progress toward the specified goals and make mid-course corrections in response to new developments and opportunities as they arise.

Successful plans align these five criteria with the overall education or library service improvement objectives of states, districts, and local schools or libraries. It is critical that technology planning not be viewed or treated as a separate exercise dealing primarily

with hardware and telecommunications infrastructure. There must be strong connections between the proposed physical infrastructure of the information technology and the plan for professional development, curriculum reform, and library service improvements. (See [Technology Planning: Questions to Consider](#) for sample questions.)

Approved Technology Plans should cover a period of not more than three years. Long-range planning is important for the effective use of information technology in schools and libraries. This may be particularly important in the case of some lease-purchase arrangements or very large capital investments that require extended commitments. However, in view of the rapid development cycle of new technologies and services, schools and libraries should approach long-term commitments with caution. To balance these concerns, a three-year planning cycle is appropriate. All approved plans should include provisions for evaluating progress toward the plan's goals, and ideally these assessments should occur on an annual basis. As indicated in Section III of this document, there may be cases in which an approved plan is longer than three years to conform to federal, state, or local requirements. Whenever an approved plan is longer than three years, there should be a significant review of progress during the third year.

Indeed, in light of the dynamic nature of this field, technology plans should undergo periodic revision to take advantage of new hardware, software, and telecommunication opportunities. As school or library staff become more proficient in the use of these information technologies, new education and library service improvement possibilities are also likely to emerge. A technology plan should be responsive to these opportunities, open to revision, and not a static document.

For many schools and libraries, the Universal Service Program itself may be one of these new opportunities. However, there is no need to write or develop a specific Universal Service Program or "E-Rate" technology plan. As discussed in Section IV of this document, it is only necessary that the approved plan include a sufficient level of information to justify and validate the purpose of a Universal Service Program request. It does not have to include the specific details and information called for on FCC Forms 470, 471, 486, and 500. The information provided on those forms should build on the foundation provided by the approved Technology Plan by documenting specific implementation details and operational steps that are being taken under the plan. That information will be considered a refinement of the plan as long as the requested services can be supported by the plan.

No Child Left Behind (NCLB) Title II Technology Planning Requirements

Whether applying for formula-funding or competitive funding, districts will be asked to submit their district technology plan to the New York State Department of Education for review prior to funding.

The specific technology plan requirements for formula and competitive grant applications for Title II, Part D in No Child Left Behind include:

Standards-based Learning and Student Academic Achievement through Technology Use

- ✓ A description of goals aligned with challenging state standards for using advanced technology to improve student academic achievement

- ✓ A description of strategies for using technology to improve academic achievement and teacher effectiveness
- ✓ A description of how the applicant will integrate technology into curricula and instruction, and a time line for this integration

Access to Advanced Technology for Effective Teaching and Learning

- ✓ Steps the applicant will take to ensure that all students and teachers have increased access to technology and to help insure that teachers are prepared to integrate technology effectively into curricula and instruction
- ✓ A description of the supporting resources, such as services, software, other electronically delivered learning materials, and print resources, that will be acquired to ensure successful and effective uses of technology

Technology Integration and Use through Effective Professional Development

- ✓ Ongoing, sustained professional development for teachers, principals, administrators, and school library media personnel to further the effective use of technology in the classroom or library media center

Research-based Technology Programs and Accountability Measures

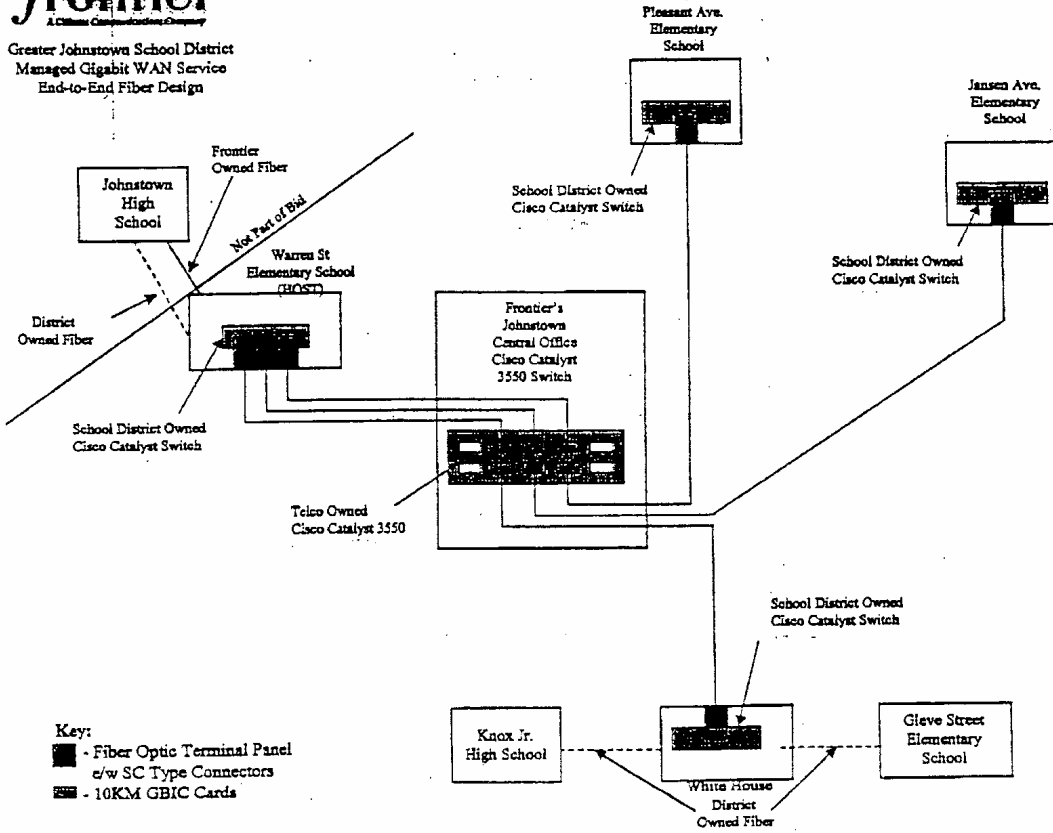
- ✓ Promotion of curricula and teaching strategies that integrate technology that are based on a review of relevant research and leading to improvements in student academic achievement.
- ✓ Accountability measures - a description of the process and accountability measures that the applicant will use to evaluate the extent to which activities funded under the program are effective in integrating technology into curricula and instruction, increasing the ability of teachers to teach, and enabling students to reach challenging state academic standards

Effective and Integrative Uses of Resources for Educational Technology Infusion

- ✓ A description of the type and costs of technology to be acquired with Ed Tech funds, including provisions for interoperability of components
- ✓ A description of how the applicant will coordinate activities funded through the Ed Tech program with technology-related activities supported with funds from other sources
- ✓ A description of how the applicant will encourage the development and use of innovative strategies for the delivery of specialized or rigorous courses and curricula through the use of technology, including distance learning technologies, particularly in areas that would not otherwise have access to such courses or curricula due to geographical distances or insufficient resources
- ✓ A description of how the applicant will use technology effectively to promote parental involvement and increase communication with parents
- ✓ Collaboration with adult literacy service providers



Greater Johnstown School District
Managed Gigabit WAN Service
End-to-End Fiber Design



APPENDIX C

Connections Between National Education Technology Standards (the ISTE NETS project) and State/Local Standards

Standard	Pre-K-5	6-8	9-12
Basic Operations and Concepts	<ul style="list-style-type: none"> • Keyboarding • Mouse use • Using Software Programs • Using Input Devices • Using the Internet • Identify and label computer parts and functions • Use computer as a modeling tool • Understand saving files • Understand common file storage and retrieval • Understand printing their work in networked printer environment 	<ul style="list-style-type: none"> ▪ Using Software Programs to create and present projects ▪ Using Internet for Research ▪ Using Input Devices to support projects ▪ Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use ▪ Use a computer system to monitor and control external events and/or systems ▪ Students have basic knowledge of how to access commonly shared programs, files and storage devices 	<ul style="list-style-type: none"> ▪ Using Internet for research ▪ Understand how to make informed and appropriate choices among technology systems, resources and services ▪ Select a computer system that meets personal needs ▪ Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use ▪ Understand how software applications and networks interact, and how to make best use of network resources

Standard	Pre-K-5	6-8	9-12
Social Ethical and Human Issues	<ul style="list-style-type: none"> • Students and their parents will understand, sign and abide by the Internet use policy • Demonstrate respect for computer system hardware and software by handling it gently and with care • Practice responsible use • Work collaboratively and cooperatively with peers, family members and other when using technology in the classroom • Students will know the school printing policy and use it when printing their work to classroom and network computers • Students will understand citations and plagiarism rules, and will use materials appropriately 	<ul style="list-style-type: none"> • Demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society • Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse • Students respect privacy of other users • Students respect software application security systems • Students abide by district Internet use policy 	<ul style="list-style-type: none"> • Students respect privacy of other users • Students respect software application security systems • Students abide by district Internet use policy • Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs • Make informed choices among technology systems, resources, and services • Analyze advantages and disadvantages of widespread use and reliance of technology in the workplace and in society as a whole • Demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information

Standard	Pre-K-5	6-8	9-12
Technology Productivity Tools	<ul style="list-style-type: none"> • Use a variety of media and technology resources for directed and independent learning activities • Create developmentally appropriate multimedia products with support from teachers, family members, or student partners • Make use of technology for presentations, including video editing and image processing • Create a personal portfolio • Store work in electronic portfolios 	<ul style="list-style-type: none"> • Use content specific tools, software, and simulations (e.g. environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research • Store work/presentations in electronic portfolios 	<ul style="list-style-type: none"> • Store work/presentations in sharable, electronic portfolios • Make use of technology for presentations, including video editing and image processing • Investigate and apply expert systems, intelligent agents, and simulations in real-world situations

Standard	Pre-K-5	6-8	9-12
Technology Communication Tools	<ul style="list-style-type: none"> • Gather information and communicate with others, using telecommunications, with support from teachers, family members, or student partners • Using telecommunications efficiently and effectively to access remote information communicate with other in support of direct and independent learning and pursue personal interests 	<ul style="list-style-type: none"> • Create web pages • Design, develop publish and preset products (e.g.) Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom • Use telecommunications and online resources to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom 	<ul style="list-style-type: none"> • Create web pages • Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity • Select and apply technology tools for research, information analysis, problem solving, and decision-making in content learning • Collaborate with peers, experts and others to contribute to a content-related knowledge based by using technology to compile synthesize, produce, and disseminate information, models, and other creative works

Standard	Pre-K-5	6-8	9-12
Technology Research Tools	<ul style="list-style-type: none"> Use technology resources (e.g. puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication and illustration of thoughts, ideas and stories 	<ul style="list-style-type: none"> Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems 	<ul style="list-style-type: none"> Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity

Standard	Pre-K-5	6-8	9-12
Technology Problem Solving and Decision Making Tools	<ul style="list-style-type: none"> • Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources • Determine when technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems • Use technology resources (e.g. calculators, data collection problems, videos, Educational software) for problem-solving, self-directed learning, and extended learning activities • Use modeling and simulation software to emulate authentic problems • Model and simulate the design of a complex environment 	<ul style="list-style-type: none"> • Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems • Demonstrate an understanding of concepts underlying hardware, software, and connectivity, and of practical applications to learning and problem solving 	<ul style="list-style-type: none"> • Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems • Investigate and apply expert systems, intelligent agents, and simulations in real-world situations

Scope & Sequence - Library Media Skills

- I - Introduce
- D - Develop
- E - Expand
- A - Apply

Information Literacy - Content & Competencies

Skill	K	1	2	3	4	5	6	7	8	9	10	11	12
Functions & Concepts of a Library													
Students will:													
Recognize the roles & duties of library media center staff	I	D	A	A	A	A	A	E	A	E	A	A	A
Share materials and information	I	D	D	D	A	A	A	E	A	E	A	A	A
Recognize how library staff assist students	I	D	A	A	A	A	A	E	A	E	A	A	A
Demonstrate proper care of library materials	I	D	A	A	A	A	A	A	A	A	A	A	A
Demonstrate the proper procedure for borrowing and returning library materials	I	D	A	A	A	A	A	E	A	E	A	A	A
Understand and Demonstrate the proper use of the card catalog or online catalog			I	D	A	A	A	I	D	A	A	A	A
Literacy	K	1	2	3	4	5	6	7	8	9	10	11	12
Students will:													
Identify and locate appropriate titles for pleasure reading	I	D	D	D	D	D	D	E	E	E	E	E	E
Select, explore, and share a variety of literature styles	I	D	D	D	D	D	D	E	E	E	E	E	E
Recognize the main elements of fiction and non-fiction	I	D	D	E	E	E	E	E	A	E	A	A	A
Recognize the parts of a book (cover, dust jacket, spine, title page, copyright page, etc)	I	D	D	E	E	E	E	E	A	E	A	A	A
Recognize the contributors to a book (author, illustrator, editor, publisher, photo editor, etc)	I	D	D	E	A	A	A	E	A	E	A	A	A
Recognize & Understand the uses of various parts of a book (index, table of contents, glossary, appendix, chapter and section headings, etc)	I?	D	D	D	D	A	A	E	A	E	A	A	A

Scope & Sequence - Library Media Skills

I - Introduce D - Develop
E - Expand A - Apply

Information Problem Solving & Research using the BIG 6 Research Process															
	K	1	2	3	4	5	6	7	8	9	10	11	12		
1) Defines Task:															
Students will:															
Define the information problem			I	I	I	D	D	E	E	A	A	A	A		
Identify information needed															
2) Information Seeking Strategies:															
Students will:															
Determine all possible sources			I	ID	D	A	A	E	A	EA	EA	A	A		
Select the best sources			I	ID	D	A	A	E	A	EA	EA	A	A		
3) Location & Access:															
Students will:															
Locate sources			I	I	D	D	D	E	E	EA	A	A	A		
Find information within sources			I	I	D	E	A	A	A	A	A	A	A		
Evaluate websites before use															
Understand and use the Dewey Decimal System & Alphabetical arrangement of fiction titles for access to print sources			I	I	D	D	E	A	A	A	A	A	A		
4) Use of Information:															
Students will:															
Engage (read, hear, view, touch, etc.)			K	1	2	3	4	5	6	7	8	9	10	11	12
Extract relevant information			I	I	D	D	E	E	A	A	A	A	A	A	A
Engage in correct notetaking procedures			I	I	D	D	E	E	A	A	A	A	A	A	A
Understand and apply legal and ethical use of information and understand what Plagiarism is and refrain from its practice			I	I	I	D	D	E	A	E	A	A	A	A	A
5) Synthesis:															
Students will:															
Organize from multiple sources			K	1	2	3	4	5	6	7	8	9	10	11	12
Present the information in a variety of formats			I	I	D	D	E	E	D	E	D	A	A	A	A
6) Evaluation:															
Students will:															
Judge the product (effectiveness)			I	I	D	D	E	E	A	E	A	A	A	A	A
Judge the process (efficiency)			I	I	D	D	E	E	A	E	A	A	A	A	A
Show evidence of applying the task's rubric			I	I	D	D	E	E	A	E	A	A	A	A	A

APPENDIX D

Equipment List

Model No.	Component Description	Qty	List	List Ext
Warren Street School				
Network Operations Center (NOC)				
WS-03509	Cisco 3509	1		
WS-CAC-2500W	16000 Series 2500Watt Power Supplies	2		
WS-X6K-S2-MSFC2	MSFC2 Supervisor Engine	2		
WS-X6516-GE-0C	16-Port GIGE Optical 'Fiber' GBIC Blade	1		
WS-X6516-GE-TX	16-Port GIGE Optical 'Copper' GBIC Blade	1		
WS-X6148-RJ-45	48-Port 10/100 RJ45 Blade (Upgradable to VCIC5)	1		
FAN2 tray (FAN-MCD-3HS)	FAN 2 (High Speed Fan Tray)	1		
WS-35486	Cisco LX GBIC (Long-haul 'Singlemode' GBIC)	4		
WS-35484	Cisco SX GBIC (Short-haul 'Multimode' GBIC)	2		
	Cisco 2600 Router	1	Existing Equipment	
PIX-516E-UR-FE-6LN	Cisco 516e PIX	1		
AR2102BLK	NetShelter VX 42U Open Frame Black (for 3509 and UPSs)	1		
AR8426A	2U Horizontal Cable Organizer	2		
AR8108BLK	1U Blanking Panel Kit (Qty 2) Black (for UPS & Server Spacing)	6		
AR9122BLK	Fixed Shelf 250lbs/114kg Black (for USB Hub and BackUp)	2		
AR2100BLK	NetShelter VX 42U Enclosure w/Sides Black (2 Additional for Servers)	2		
AR8210BLK	Roof Fan Tray	3		
AR8216BLK	Rack-Mount 16" LCD/Keyboard Drawer Black	1		
AP5202	APC 16 Port Multi-Platform Analog KVM	1		
AP5254	12' Cable [KVM SWITCH CABLE SET]	10		
AP5250	6' Cable [KVM SWITCH CABLE SET]	5		
SU5000RMXL75U	APC Smart-UPS 5000VA RM XL	2		
SU48R3XL75U	APC Smart-UPS 48V RM 3U External Battery Pack	2		
SU1400RMXLE3U	APC Smart-UPS 1400 VA RM	1		
SU2200RMXL3U	APC Smart-UPS XL 2200 VA RM 3U 120V	7	Additional Purchases	
Warren Street Elementary School IDF				
WS-03560-48PS-S	Cisco 3560-48PS	1		
WS-35484	Cisc SX GBIC	2		
WS-35483	Cisc TX GBIC	2		
	Cisco 0950G-48	2	Existing Equipment	
SU1400RMXLE3U	APC Smart-UPS 1400 VA RM	1		
Johnstown Central High School				
IDF A1341				
WS-03560-12G	Cisco 3560-12G	1		
WS-35486	Cisco LX GBIC	1		
WS-35484	Cisco SX GBIC	10		
	Cisco 0950G-48	2	Existing Equipment	
SU2200RMXL3U	APC Smart-UPS XL 2200 VA RM 3U 120V	1		
IDF A1301				
WS-03560-48PS-S	Cisco 3560-48PS	1		
WS-35484	Cisco SX GBIC	2		
WS-35483	Cisco TX GBIC	2		
	Cisco 0950G-48	2	Existing Equipment	
SU1400RMXLE3U	APC Smart-UPS 1400 VA RM	1		

MEDIA CENTER			
WS-C3560-48PS-S	Cisco 3560-48PS	1	
WS-G5484	Cisco SX GBIC	3	
WS-G5483	Cisco TX GBIC	2	
	Cisco 2950G-48	3	Existing Equipment
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
DISTRICT OFFICE			
WS-C3560-48PS-S	Cisco 3560-48PS	1	
WS-G5484	Cisco SX GBIC	1	
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
Glebe Elementary School			
WS-C3560-48PS-S	Cisco 3560-48PS	1	
WS-G5484	Cisco SX GBIC	1	
WS-G5483	Cisco TX GBIC	4	
	Cisco 2950G-48	2	Existing Equipment
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
The White House			
WS-C3550-12G	Cisco 3550-12G	1	
WS-G5486	Cisco LX GBIC	1	
WS-G5484	Cisco SX GBIC	1	Existing Equipment
	Cisco 1750 Router	1	
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
Knox Junior High School			
WS-C3560-48PS-S	Cisco 3560-48PS	1	
WS-G5484	Cisco SX GBIC	1	
WS-G5483	Cisco TX GBIC	4	
	Cisco 2950G-48	2	Existing Equipment
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
Transportation			
WS-C3560-24PS-S	Cisco 3560-24PS	1	
	Cisco 2600 Router	1	
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
Jansen Elementary School			
WS-C3560-48PS-S	Cisco 3560-48PS	1	
WS-G5486	Cisco LX GBIC	1	
WS-G5483	Cisco TX GBIC	4	
	Cisco 2950-48	1	Existing Equipment
	Cisco 2950-24	1	Existing Equipment
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	
Pleasant Avenue Elementary School			
BDF			
WS-C3550-12G	Cisco 3550-12G	1	
WS-G5486	Cisco LX GBIC	1	
WS-G5484	Cisco SX GBIC	5	
WS-G5483	Cisco TX GBIC	2	
WS-C3560-48PS-S	Cisco 3560-48PS	1	
	Cisco 2950G-48	2	Existing Equipment
SU2200RMXL3U	APC Smart-UPS XL 2200 VA RM 3U 120V	1	
IDF-1			
WS-C3560-24PS-S	Cisco 3560-24PS	1	
WS-G5484	Cisco SX GBIC	1	
SU1400RMXLB3U	APC Smart-UPS 1400 VA RM	1	

