

# Coventry Public Schools

## Technology Plan

**2008-2012**

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## **Executive summary**

The Coventry Public Schools' District Technology Plan provides a framework and direction to improve student performance and enhance the teaching/learning process through the effective use of technology. The benefits and potential outcomes connected with the effort to enhance education technology in the district are outlined in this document and include:

- Enhanced learning
- Improved teaching
- Facilitation of management
- Enhanced communication
- Improved community development

The district Technology Plan incorporates aspects of design, including integration of technology into the curriculum, establishment of learning environments, professional development and system design. Components of the action plan include the following strategies and priorities:

- Increase district funding allocations to schools so that the critical mass of 5:1 student-to-computer and 1:1 teacher-to-computer ratios can be realized.
- Continue to support professional development that encourages sharing of ideas and successful practices in technology use for all students to all ability levels.
- Develop an approach that enables the effective tracking of teachers' professional growth and development along a continuum of clearly identified technology skills and competencies.
- Provide professional development delivery models that encourage teachers to assume greater independence in pursuing technology learning opportunities directly related to student needs.
- Students will demonstrate proficiency in using technology to acquire information and present learning by the benchmark grades of five, eight and twelve.
- Instructional technology needs will be determined within the curriculum development process.
- Faculty and staff will receive professional development in research-based, effective, instructional technology applications in order to improve instruction and instructional diversity.
- The district will develop an effective information management system for recording and reporting on student progress, school progress, administrative responsibilities and State mandates.
- The district will develop policies to ensure safe and acceptable access to technologies.
- The district will develop effective funding resources for technology from a variety of sources.
- Hardware, infrastructure and software decisions will align with State recommendations and will comply with all purchasing requirements.
- Technology will be maintained with effective accessibility and reliability to ensure that the instructional goals will be augmented by technology for the success of all learners. Augmentative and assistive technologies will be provided to create equity for all students.

## ACKNOWLEDGEMENT AND MEMBERSHIP

This plan builds on the plans written in 1994, revised in 1999,2003 and updated in 2008.

Individuals who have in the past attended and participated in the development of this document are listed below:

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Mr. Michael Convery	Assistant Superintendent (MIS Support)
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NOTE: This version of the district technology plan provides the link between curriculum development, professional development, district strategic targets, a capital improvement study team report, and student/teacher expectations. It is work in progress and serves as a guide to a working team developing a framework that embeds technology as a resource for instruction to achieve the goal of success for all learners.

# 1. INTRODUCTION

This document presents a technology framework consisting of recommendations and implementation strategies to attain Coventry Public Schools' educational reform goals with state-of-the-art education technology use. This strategic plan for educational technology includes the integration of this technology with the educational objectives of the district. This includes curriculum integration, professional development, policy, and procedures as well as other factors related to successful implementation of information technologies. This document is based on the findings articulated in the technology plans of the individual schools, the business sector, and citizens of Coventry.

This document is a framework for the implementation of information technology for the next several years. Recognizing spiraling changes in technology updates to this plan should be done at regular intervals. However, this document provides the framework for this process.

## 1.1. Envisioning the Future

Although it is impossible to predict the future of technology given its rapid pace of change the district recognizes the influence technology has on the education of its students and the burden this places on teachers within the educational process. Education and the use of technology will have a synergistic affect on education. It will influence the way pedagogy and instructional time is used. This change reflects changes in the workplace and higher education.

Demands from the workplace to have technologically adept employees increase the burden on Coventry schools to ensure that their graduates are competent in their ability to use technology. The skills needed to access, gather, organize and transmit information are necessary skills in our information age. Further, students need to use these skills in order to create their own knowledge, to think more critically, and to communicate and solve problems more creatively and analytically.

The district needs to show leadership in deploying existing and emerging technologies into the classroom, school building and management. It needs to maintain and develop the infrastructure that supports these technologies and work with the business community in its decision-making.

### 1.1.1. Mission, Educational and Management Priorities

The purpose of this plan is to foster and support innovations which transform the traditional approaches to teaching and learning, curriculum development, assessment, and management systems to systems which are more responsive and effective in their ability to address changing needs.

#### *Mission Statement*

The district will promote the constructive use of technology in the classroom by providing the leadership, direction, staff development and support for schools to secure technology.

#### *Educational Priorities*

Through the use of technology the district intends to improve student learning, improve student achievement, improve teaching productivity, promote equitable access to technology and information, provide industry standard software and training to its students.

#### *Management Priorities*

Through the use of technology the district intends to provide uniform management tools, avoid duplication of tasks by utilizing at-source entry and standard retrieval methods, efficient means of gathering, tracking and reporting student information, and provide communication vehicles for staff, students and citizens.

### 1.1.2. Technology Vision

Technology includes infrastructure, information systems; and management systems. The purpose of technology is to provide an infrastructure to gather, organize and communicate information effectively and thereby give teachers and students the to shift learning to methods where students access, analyze, apply and communicate what they have learned. Through information management systems the district hopes to reduce paperwork and increase productivity. The vision of technology on Coventry is one where learning

opportunities are enhanced through technology; teachers are provided tools to augment and expand diverse opportunities to engage learners; students have access to workplace quality technologies and assistive technologies to make them competitive in the workplace; and the public can receive access to information on the progress of schools and students in order to improve the educational programs.

### **1.1.3. Technology Priorities**

The purpose of technology must reflect the educational and management needs of the district. It must therefore include local technology planning focused upon improved teaching and learning, professional development for curriculum integration, and connectivity within the district and to related institutions.

Guidelines for effective local planning and strategies for ongoing monitoring, evaluation and revision of technology initiatives need to be articulated. Training opportunities, follow-up and support need to be provided to staff and teachers. Professional development and collaboration need to focus on practices that work in the district.

Access to information and staff by citizens through e-mail and Internet access must be made available in order to provide a partnership between school and home. This network will then provide parents and the community access to information deemed appropriate over such a medium.

Management of technology must begin with securing the infrastructure and the information it delivers, by providing firewalls, redundancy, fault-tolerance, levels of access, and backup of data. As the network expands, the management of traffic and associated speed of delivery will take on more importance. This will require the creation of a network topology that is flexible and manageable.

- Students will demonstrate proficiency in using technology to acquire information and present learning by the benchmark grades of five, eight and twelve.
- Instructional technology needs will be determined within the curriculum development process.
- Faculty and staff will receive professional development in research-based, effective, instructional technology applications in order to improve instruction and instructional diversity.
- The district will develop an effective information management system for recording and reporting on student progress, school progress, administrative responsibilities and State mandates.
- The district will develop policies to ensure safe and acceptable access to technologies.
- The district will develop effective funding resources for technology from a variety of sources.
- Hardware, infrastructure and software decisions will align with State recommendations and will comply with all purchasing requirements.
- Technology will be maintained with effective accessibility and reliability to ensure that the instructional goals will be augmented by technology for the success of all learners.
- Augmentative and assistive technologies will be provided to create equity for all students.

## **1.2. Strategic Technology Design Decisions**

Driving any decision to purchase technology or move the district in one direction or another must be the educational objective formulated in the standards adopted by the district and the management goals of the district. With its limited resources the district must prioritize the appropriation of these resources so that an equitable distribution of these resources is made to all schools.

Through the offices provided for technology and professional development, coordination must be provided to match needs assessment and curricula objectives through the planning process. Planning processes for the implementation of technology must be coordinated with schools to facilitate the sharing of resources.

As part of the implementation guidelines the district is committed to the following critical technology design decisions for its technology system:

- The priority of the information technology support system will be to improve student learning

- There will be an integrated technology system encompassing teaching, learning, and management.
- The system design will be based on vendor-independent, open-system standards.
- The network will integrate voice, video, and data communication systems.
- Database management software will be relational and able to run on a variety of operating systems and hardware platforms.
- Information systems will be bi-directional allowing data to be both retrieved and queried.
- Information will be captured once and validated at the source.
- All computers will be networked and priority given to shared resources.
- All technology resources and staff activities will be coordinated and integrated with appropriate curriculum initiatives.

## **2. DESIRED OUTCOMES OF THE TECHNOLOGY PROGRAM**

The development of a district-wide education technology plan and its subsequent implementation can yield a wide range of important benefits to improve student learning, teaching, and educational management throughout the district.

### **2.1. Enhanced Learning**

Students share the responsibility for their own learning with their teachers. New models for teaching imply new understanding of learning. The district education technology plan will provide the foundation and the resources for students to reach out and access information, to assess and evaluate information sources, and to be able to create knowledge. Learners will become more active instead of passive recipients of information. They will be able to increase the impact of their individual creativity on their own performance against new learning standards. Students' unique learning styles and preferences will generate alternative pathways to the achievement of common learning goals.

Curricular outcomes and technology standards set by this planning process will help ensure that students in every Coventry Public School have the same access to learning opportunities and the expectation of high achievement. We can witness students using powerful multimedia presentation tools to communicate what they have learned, accessing information resources throughout the world, and communicating with peers in diverse cultures. Examples of the major anticipated benefits to the process of student learning include:

- Accessing on-line resources to assess, organize, analyze and evaluate data from the school, home and public institutions.
- Using industry-standard technology to enhance motivation, increase higher level thinking skills, and develop independent work skills.
- Improving academic achievement as measured by state testing and standard-based performance objectives.
- Enhancing language and communication skills through writing, research, Internet and distance-learning activities.
- Accessing the multicultural world through Internet and distance-learning activities.
- Equalizing access to technology and information for students with limited means of access.

### **2.2. Improved Teaching**

The technology plan will support improved teaching by providing tools to assist teachers in implementing reform. A district-wide plan will reduce fragmentation and inequity across the district with respect to access and effective use of instructional resources. Teachers throughout the district will be empowered by

educational technologies that save time, provide easy access to information resources, and enable more effective communication with other teachers and school administrators.

Planning for instruction on the district level will enable and promote planning at the classroom level by providing access to resources aligned Coventry Public Schools standards-based curriculum. A district education technology plan will further benefit the teaching profession by:

- reducing teacher paperwork through the use of efficient record-keeping tools,
- offering powerful multimedia presentation capacity for classroom demonstration,
- providing diagnostic and background information on individual student progress to aid in making instructional decisions for individual students,
- providing technology resources to support improved curriculum development and instructional design,
- promoting the integration of process, content, and technology skills within the curriculum,
- increasing the opportunities for communication among teachers who share the same student populations or similar content-area teaching responsibilities, and
- providing access to teaching resources from remote locations.

## **2.3. Facilitation of Management**

Perhaps the greatest challenge to the efficient and effective operation of schools lies in the ability of decision makers to access, analyze, and report information concerning student populations, student and staff demographics and records, and accountability for learning outcomes at the classroom levels. The technology resources provided by the implementation of a district education technology plan can be positioned to produce high performance from educators tackling these management challenges.

The development of voice, video, and data transmission performance standards for utilities such as word processing, databases, spreadsheets, and electronic mail ensures compatibility and inter-operability across computer platforms and connected devices, making school operations more efficient. The district can increase accuracy and timeliness of information. Further, the use of electronic media reduces the reliance on paper and voice systems of communication reducing costs and human intervention.

### **2.3.1. Central Office Staff**

Central office staff need the tools available to school-level decision-makers as well as those to allow the aggregation and sorting of information district-wide. A common set of data-analysis tools needs to be made available throughout the district.

The district has invested in School Max a student management system that is able to maintain disparate types of information centrally for all areas of student assessment and demographic information is necessary to fulfill NCLB (No Child Left Behind) legislation and links to a statewide student information system.

### **2.3.2. School Administration/Resource Staff**

School administrators and other staffs, such as guidance, Title One, and special education, must have access to information to support their management decisions. School administrators need information from a range of sources regarding students, instructional programs, and staff. Specialists who serve unique populations of students must be able to retrieve records, diagnostic and performance information, and individual learning plans electronically in order to improve their decision-making abilities.

Media centers in each school are linked to RILink where information can be accessed on-line. Research can be performed on line using electronic cataloguing systems. Media centers throughout the district make their resources available to other schools through a district wide cataloguing system. Students and teachers have access to library systems state-wide and globally. Devices such as projection units, scanners, video editing equipment, are available as resources for anyone in the school building for the purpose of integrating technology into student learning.

### **2.3.3. Classroom Teachers**

Classroom teachers need access to curriculum databases, student records, grading and performance assessment tools, and telecommunications to support decisions regarding classroom instruction. Teachers need access to content specific technology resources, augmentative technologies to address diverse student needs, information technologies to make informed decisions regarding instruction, presentation technologies to create alternative learning environments and communication technologies to keep students and families informed of progress.

### **2.3.4. Network Administration**

The district has upgraded all 384K lines to T1 Lines. The high school has been upgraded to a full DS3. The Knotty Oak Middle School received an upgrade to two T1 lines. All the connections between the schools and RINET have been redirected to the high school to form a community frame relay cloud. One DS3 line had been placed between the high school and RINET. RINET provides tools that allow district personnel to monitor the community frame traffic.

## **2.4. Improved Community Development**

Families will be able to access technology for a variety of uses including access to school and district websites, information systems to maintain reports on student progress, and participation in technology-based presentations. New educational reforms require community understanding of and participation in high standards-based education that promote both rigor and relevance. To achieve this, technology can provide the tools for electronic portfolios, information management and presentation systems to engage a wider range of community participation.

School computers will be available for use by community-based programs within the school district in after-school workshops. Adult education courses in technology will be made available to the community. Educational access to industry-standard technologies will strengthen the business-world appreciation for the quality of graduates.

## **3. TECHNOLOGY RICH LEARNING ENVIRONMENTS**

### **3.1. Guiding Principles**

The goals of instructional programs guide all decisions for technology resources. Coventry's goal is to produce successful graduates of a PK-12 educational system who are contributing members of a global community and workforce. As such, all students must be successful. Therefore, the technology must be sufficiently accessible and flexible to meet the needs of diverse learners. All technology should be both physically and educationally appropriate to the student. The framework identified as follows provides direction for classroom and laboratory models of instruction as well as information systems that support improved teaching and learning.

### **3.2. Technology Rich Learning Environments**

#### **3.2.1. Individual Classroom Computers**

There will be an adequate number of computers to meet the 4:1 ratio of students to computers and the 1:1 ratio of teachers to computers in each classroom. Each computer must have multimedia capabilities adequate to support the software used in the classroom. Printers and scanners must be in sufficient quantities to optimize student productivity. Technology specifications are noted in the appendix.

#### **3.2.2. Instructional Technology Labs**

There will be at least a 1:1 ratio of computer to students in laboratory settings. Replacement computers will be available to these labs in the event that computers become inoperable. Projection equipment will be available for the instructor and student presentations. Wireless, mobile laboratories will be needed where space constraints are evident.

### **3.2.3. Media Centers**

All workstations will be available to access the electronic cataloging system. Connections will be available for teachers or students with laptop computers for network access. There will be scanners and digital cameras available for the entire school. A projection device will be available for instruction and for training of large groups. Workstations will be available for student research to on-line resources.

The Follett Destiny Software system will be used district-wide in media centers for cataloging. A telephone connection will be available in each center for technical support. This will make district sharing of resources possible and statewide sharing through RILink.

### **3.2.4. Career & Technical Classrooms & Specialty Classrooms**

The high school houses a regional career and technical center school which utilizes unique technologies to meet the industry standards. These technologies include but are not limited to graphics design, automotive technologies, manufacturing, carpentry, electronics and technology. Courses such as science require unique and specific hardware applications and devices. Some special needs classrooms require assistive technologies to augment or address specific learning needs such as visual, auditory or cognitive challenges.

Additionally, the middle and high schools have implemented robotics classrooms as part of the general curriculum offerings. These technologies need to be developed in concert with curriculum modifications.

## **3.3. Enhanced Learning**

Students will continue to develop technological skills through the grade levels developing proficiency for use of technology as an expected tool for producing student work by high school. Similarly, students will increasingly use technology in content areas to develop cross-content literacy skills and content specific proficiencies as well as present a portfolio and student demonstration using technology as part of the graduation requirements for the school district. To achieve this, this technology plan calls for:

- There will be a 5:1 ratio of students to computers in the classroom.
- Automated library system will be available at all schools with library a cataloguing system & RI Link.
- Create shared directories for teachers to use between buildings, content areas, and grade levels.
- Science classes will use technology to collect data from real-world experiences.
- A scope and sequence developed for technology skills.
- Students will use multimedia presentation software and internet access for demonstration projects.
- Student with special-needs will have access to computer resources designed to meet learning needs.
- Diverse software and hardware will be utilized to meet the diverse learning needs of all students.
- Middle and high school students will have access to robotics laboratories and technology education classes.

## **3.4. Improved Teaching**

Teaching must respond to the needs of unique learners. Technology provides both an augmentation of teaching opportunities and resources to monitor student achievement. This technology plan calls for:

- There will be a 1:1 ratio of teachers to computers in the classroom.
- Teachers will have access to Intranet and Internet e-mail
- Projection devices will be available for instruction and for student demonstrations.
- Each classroom should have a multimedia workstation available for instructional demonstration.
- Video conferencing devices and software for instruction and collaboration among classes.

- A database will be developed to track student progress according to standards based assessment.
- Provide in-service program to train in the instructional applications of computers.
- Distance learning will be used to connect teachers for professional development.
- Create shared directories for teachers to use between buildings, content areas, and grade levels.
- Teachers and administrators will have remote access capability to the network through a dial-in connection.

### **3.5. Facilitation of Management**

Management software will be standardized throughout the District. Software will be appropriate for specific application. Security will be provided so that access to this information is commensurate with the individual's role in the district. Standards will be established for the type of data to be maintained throughout the district. Productivity software will be made available for scheduling of appointments, e-mail, and conferencing.

Through the use of electronic systems the district will create more efficient and cost-effective ways to handle data by: entering data only once by designated staff and allowing access to it by all staff who have a right to see this information, handling all routine communication tasks electronically rather than via paper or voice systems, ensuring that data collection becomes a by-product of daily processing activities, generating required reports automatically from databases, and handling communication of report data electronically and printing it only when required.

#### **3.5.1. School Administration/Resource Staff**

- Every school maintains an automated library system in order to share resources throughout the district and to access the on-line catalogue from remote media centers and classrooms.
- The district adopted School Max - a centralized student management system with web access.
- Standard tools for reporting student data, queries, and browsing data will be created by the district.

#### **3.5.2. Central Office Staff**

The following represents areas where central office services are enhanced by technology.

- The district will link with Town services for payroll, purchasing and budgeting.
- Unified Learning Support Services will automate census and Medicaid reimbursement.
- Human Resources will automate substitute calling using a web based program.
- Professional Development will explore web-based professional development management.
- The Superintendent's Office will post School Committee agenda at Town and State websites.
- Grants & Resources will post grants
- Facilities will manage transportation and HVAC systems electronically.
- Office of Technology will manage district-wide websites and student management systems.

#### **3.5.3. Network Administration**

- System Management Software will be purchased to manage inventory. Switching hubs and management software will be used to segment traffic between students and administration.
- A system for disseminating software, service packs and updates will be explored.

### **3.6. Standards-Based Learning in a Technology Rich Environment**

The commitment to a standards-based education brings many opportunities for incorporating technology in the curriculum. The new grade level standards (GLE/GSE) require applied learning across all disciplines.

From problem solving to using communication tools and techniques, each subject area can benefit from use of technology. In addition to the requirements set by GLE's and GSE's, Coventry Public Schools has implemented the Certificate of Initial Mastery. This endorsement to the diploma also requires students to apply technology in all areas of learning.

### **3.6.1. Content Area Technology Applications**

Coventry schools have embedded technology application development into the curriculum development process. In the five-year curriculum cycle, each content area team assembled must address the technology-based content skills and the technology resources necessary to meet the curriculum expectations. As each content area is developed, publicly reviewed and implemented, a technology component is embedded to ensure that technology is directed by instructional goals and linked to student achievement.

Specific content areas can identify the unique applications of technology such as probes and devices in science investigations or multi-media systems for student presentations in an English or content area course. The redundancy of technology applications throughout the content area curriculum development cycle ensures that technology is updated and enhanced on a regular cycle across grades.

The adoption of curriculum, aligned to State expectations with embedded technology applications and resources links resources to goals and provides a timeframe for both funding and professional development.

### **3.6.2. Communication Tools and Techniques**

- The student publishes information using several methods and formats, such as overhead transparencies, handouts and computer generated graphs and charts; that is, the student: (1) organizes the information into an appropriate form for use in the publication; (2) check the information for accuracy; and (3) formats the published material so that it achieves its purpose.
- The student develops a multimedia presentation, combining text, images, an/or sound; that is, the student: (1) selects an appropriate medium for each element of the presentation; (2) uses the selected media skillfully, including editing and monitoring for quality; (3) achieves coherence in the presentation as a whole; and (4) communicates the information effectively, testing audience response and revising the presentation accordingly.

### **3.6.3. Information Tools and Techniques**

- The student uses information technology to assist in gathering, analyzing, organizing, and presenting information; that is, the student: (1) acquires information for specific purposes from on-line sources, such as the Internet, and other electronic data bases, such as a scientific data base on CD ROM; and (2) uses word-processing, graphics, data base, and spreadsheet programs to produce project reports and related materials.
- The student uses on-line sources to exchange information for specific purposes; that is, the student: (1) uses e-mail to correspond with peers and specialists in the subject matter of their projects; and (2) incorporates into e-mail correspondence data of different file types and applications.
- The student uses word-processing software to produce a multi-page document; that is, the student: (1) uses features of the software to create and edit the document; (2) uses features of the software to format the document, including a table of contents, index, tabular columns, charts, and graphics; and (3) uses feature of the software to create templates and style sheets for the document.
- The student writes, adds content to, and analyzes the data base program that uses a relational database; that is, the student: (1) write a program capable of handling data with at least two files; (2) creates macros to facilitate data entry, analysis, and manipulation; (3) creates multiple report formats that include summary information; and (4) merges data from the data base with other files.

- The student creates, edits, and analyzes a spreadsheet of information that displays data in tabular, numeric format and includes multiple graphs; that is, the student: (1) creates a spreadsheet that displays the use of formulas and functions; (2) uses features of the software to create multiple spreadsheets and to synthesize the spreadsheets into a single presentation.

### **3.7. Special Learning Needs**

Technological devices can maximize the academic abilities and social skills of special needs students. When identified, technological resources are included as an identified intervention or support for a student's learning need in the student's individual education plan. This specific and targeted response on a student by student basis provides a process for ensuring technological resources for instruction. Additionally, technologies must be available to ensure equity and non-discrimination in promoting the success of all learners.

## **4. MAJOR RECOMMENDATIONS – TARGETS**

The Coventry School District established a strategic plan and included targets for promoting technology as an educational resource. Technology is both a resource for other targets as well as a target for progress.

### **4.1. Learning**

Maintain and develop the scope and sequence for technology related skills K through 12.

Require students to meet minimum standards in those skills.

Strengthen the middle school technology applications preparation of students in order to better prepare students to meet the academic rigor of the new high school regulations at CHS.

State High School Proficiency Demonstration Requirements: At CHS students must maintain an electronic portfolio and produce a capstone presentation as a student demonstration.

Strategic Planning Target: All students will demonstrate the ability to access information via the internet and produce a research-based, multi-media presentation prior to exiting grades 5, 8 and 12.

### **4.2. Teaching**

A schedule for ongoing training is developed and implemented. This includes workshops and credited courses. Professional development is provided at the district and the school levels.

Minimum proficiencies will be set for administrators, faculty and staff for the use of technology in the district following national standards.

Software will be purchased for tracking student progress as it applies to the Standards.

### **4.3. Management**

Devise a system for reviewing, monitoring and updating the Acceptable Use Policy.

All students and parents are required to sign an Technology Acceptable Use agreement.

The district maintains security and safety provisions through RINET filters, protections and usage agreements and discipline procedures aligned with state and E-Rate requirements.

Management applications are maintained with firewalls and access protection to ensure the reliability and exclusivity of private data.

Coventry participates in the State student information management system through School Max.

Coventry has implemented a substitute management application that is web-based and is investigating applications for professional development and phone contacts with families.

School Max provides a form of IEP electronic management that will be reviewed for effectiveness.

#### **4.4. Communication**

District-wide email has been implemented.

All schools maintain websites as does the district. These need to be updated and improved.

The School District website is linked to the Town website.

Schools have created varying levels of PTA listservs and staff listservs. These need to be reviewed and fully implemented for outreach.

Teachers at various schools maintain individual websites for parent and student access to class information.

### **5. FUNDING STRATEGIES**

The district must bear the primary responsibility to fund the technology initiatives that support learning and teaching. Grants, endowments and donations must be used to augment the initiatives. The district needs to work with other agencies and Town organizations to share resources and procure grants. The primary funding resources are identified in a companion document entitled Capital Improvement Study Team. The summary of the funding strategies are listed below.

Coventry schools each identify costs for maintenance of technology annually in school-based budgets.

Coventry district identifies district-level costs for maintenance of services such as RI-NET and RI-LINK as well as multi-year contracts for service or equipment and district level staffing. These costs are also included in the annual budget.

Costs for the inclusion of technologies needed to implement curriculum reform are included as a district cost under the budget of the Assistant Superintendent.

State and federal grants provide specific, non supplanting funds for Title I, Special Education, technology and other categorical funding areas. Additionally, Coventry Schools seek discretionary grants from State and philanthropic organizations and has recently re-acquired E-Rate funding.

Grants and donation efforts need to be increased to fulfill the goals of the technology plan since the capital costs are not recursive other than for maintenance and supplies.

A strategy embedded in the Capital Improvement Study Team report and the School Committee strategic target plan is the lease/purchase agreement allowing the district to acquire the necessary equipment to meet the goals of the technology plan.

The Town provides a Town Capital Budget separate from the School Department Budget which can be accessed by the school department. Coventry Schools received a matching award for technology cost sharing a lease/purchase agreement over four years in support of the technology targets for student proficiencies at grades 5, 8 and 12.

Remaining funding approaches include requesting fund reserves from the Town for a specific technology purchase and/or seeking a public bond referendum. An approximate cost for the full implementation of the technology plan is \$1.5 million which needs to be amortized over a number of years or combined with a Town capital request for other school department capital improvement needs to acquire the needed technologies to implement professional development and achieve student proficiencies.

#### **5.1. Budgeted Items**

The district will continue its commitment to the integration of technology into to learning activities of the students. To do this the district must provide adequate funding to support these activities. It must not rely on other funding sources to promote the goals and objectives that create technologically rich learning environments for its students.

## 5.2. Grants, Funds, and Donation

Non-budgeted money must be viewed as ancillary to the monetary commitment the district has made to technology. These funds should be used to enrich the activities in the district and not to maintain the goals and objectives outlined in this document.

Recognizing the high costs involved in maintaining a state-of-the-art network the district must pursue funding sources from Federal, State and private sources. This calls for collaboration with other agencies or constituent groups in the Town. Private industry must be invited to participate in the development of this learning environment through donations and partnerships that promote shared civic goals.

## 6. IMPLEMENTATION STRATEGIES AND ACTION PLAN

Coventry Public Schools is in a position to link improved student learning and classroom teaching to an education technology infrastructure. As educators, parents, and communities attempt to improve their schools, they will find that information technology helps develop the new skills for the next century—skills for accessing, analyzing, and communicating information. The focus during the design of this information technology framework for education has been the improvement of teaching and learning in the district.

The district has a responsibility through its schools to prepare the leaders of tomorrow for the challenges they will face in a highly technical society. Technology will become more pervasive as the tool to locate information, and manipulate text, numbers, graphics, audio, and video. Students must become the masters of these twenty-first century tools. As education moves beyond the basic skills and evolves into more sophisticated learning levels, the array of software tools and learning alternatives simultaneously expands.

### 6.1. Funding Projection 2008-2012

#### 6.1.1. Goal: Demonstrate knowledge, skills and understanding of concepts related to technology.

Objective	Action Step	Responsibility Center	Projected Expense and funding source	Timeline
Use technology tools and resources for managing and communicating information.	Teachers will be required to receive and communicate using district email. Building level professional development will be provided on an as needed basis.	Superintendent Assist. Superintendent District Technicians Building Administrators	\$2,000 Local funds	7/08 - 6/09
Use technology tools and resources for managing and communicating information.	All teachers responsible for grading students will enter grades electronically.	Assistant Superintendent	\$5,000 Local funds and Article 18	8/08 - 6/10 And thereafter
Use technology tools and resources for managing and communicating information.	Teachers will access home directories and save documents in these folders	Building administrators	Article 18	7/08 - 6/09
Demonstrate proficiency in the use of common input & output devices; solve routine hardware and software problems; and make informed choices about technology systems, resources, and services. (I)	Teacher will be able to locate and install a network printer. Teachers will be able to connect and add a local printer with drivers.	Media Specialists Building Administrators Technology liaisons	Article 18	8/08 - 6/09  On Going
Demonstrate proficiency in the use of common input & output devices; solve routine hardware and software problems; and make informed choices about technology systems, resources, and services. (I)	Teachers will be able to correctly identify hardware and software problems and effectively communicate them to support personnel.	Media Specialists Building Administrators District Technician	N/A	8/08 - 6/10
Use technology tools and information resources to increase productivity, promote creativity and facilitate academic learning (I,III,IV,V)	Teachers will use productivity software to create lesson plans that will be shared electronically.	Curriculum coordinators Media Specialists Building Administrators	Article 18	8/08 - 6/10 Project specific

**6.1.2. Goal: Teachers plan and design effective learning environments and experiences supported by technology. NETS\*T (II)**

Objective	Action Step	Responsibility Center	Projected Expense and funding source	Timeline
Differentiate between appropriate and inappropriate uses of technology for teaching and learning while using electronic resources to design and implement learning activities.		Director of Technology Director of Professional Development	\$10,000 Title II funds	7/08 - 6/12  On going
Identify, select, & use hardware and software technology resources specifically designed for use by PK-12 student to meet specific teaching and learning objectives. (I,II)	Teachers will design capstone and electronic portfolio models for students to meet PBGR requirements.	Media Specialists PBGR Coordinators	Article 18	7/08- 6/12  On going

**6.1.3. Goal: Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning. NETS\*T (III)**

Objective	Action Step	Responsibility Center	Projected Expense and funding source	Timeline
Teacher use technology to support learner-centered strategies that address the diverse needs of students. (III)	Teachers use digital camera and establish electronic portfolios.	Curric. Coordinators Professional Develop. coordinator	\$10,000	8/08- 6/12 Ongoing by schools (CHS)

**6.1.4. Goal: Teachers use technology to enhance their productivity and professional practice. NETS\*T (V)**

Objective	Action Step	Responsibility Center	Projected Expense and funding source	Timeline
Use content specific tools and information resources to support learning and research.	Use probes in biology and chemistry classes at high school	HS Science Chair	Champlin Grants Title II funds and RIDE grant	11/08- 6/12 Project-based

**6.1.5. Goal: Educational leaders ensure that faculty and staff take advantage of quality professional learning opportunities for improved learning and teaching with technology.**

Objective	Action Step	Responsibility Center	Projected Expense and funding source	Timeline
Provide for learner-centered environments that use technology to meet individual and diverse needs of learners.	Lease/Purchase 300 computer systems including wireless laptops and desk models to implement targets.	Director of Finance District Technician Asst. Superintendent	\$450,000 Lease/Purchase Town & School \$75K/\$75K	7/06 - 6/09
Provide for learner-centered environments that use technology to meet individual and diverse needs of learners.	Two (2) HS business labs will be upgraded to GHz processors.	Director of Career and Technology Center District Technician	\$16,000 Local	7/07 - 6/10
Provide for and ensure that faculty and staff take advantage of quality professional learning opportunities for improved	Establish nine liaisons for the schools to provide local support and web management.	Middle School Principals Professional Development	\$13,500 Title II	7/06 - 6/10

learning and teaching with technology. NETS*A		Coordinator		
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**6.1.6. Goal: Educational leaders ensure the integration of technology to support productive systems for learning and administration.**

Objective	Action Step	Responsibility Center	Projected Expense and funding source	Timeline
Develop, implement and monitor policies and guideline to ensure compatibility of technologies [SIF compatible]	Work with principals and Central Office staff to improve access to student and staff data.	Assistant Superintendent Central Office Staff	\$5,000 Local	7/08 - 6/11
Implement and use integrated technology-based management and operations systems.	Explore information systems for professional development monitoring. MyPlan.Com	Central Office Staff PD Coordinator	Local SIS Vendor	7/08 - 6/12
Implement and use integrated technology-based management and operations systems.	Provide training for District SIS.	Assistant Superintendent Central Office Staff	\$15,000 Local and Article 18	8/08- 6/09

## **7. EQUIPMENT NEEDS ANALYSIS**

### **7.1. Enhanced Learning**

Multimedia workstations need to be purchased for instructional use in order to match the 4:1 ratio of students to computers. Purchase peripheral devices that are used with computers, e.g. scanners, projection units, printers, etc. Every classroom should have at least one color inkjet printer. Large screen monitors or projection devices will be available for instructional classroom settings.

Music centers will have MIDI software and hardware interfaces for use with equipment and music composition.

Science labs will be equipped with probes for data collection. Software will be purchased to perform simulated experiments and to organize, analyze and display data. Devices for collecting data in the field for real-world application will be purchased.

Digital cameras and scanners will be available in each media center.

### **7.2. Improved Teaching**

Multimedia workstations need to be purchased for instructional use in order to match the 1:1 ratio of teachers to computers.

Teachers will be trained in the basic use of computers, networking and common applications. This can be done with in-service, distance learning or tutorial software. Teachers will also be trained to use curriculum specific software and to integrate software into the subject area. Teachers will be trained in the use of on-line resources and the use of appropriate measures to provide security in the classroom when students use these resources.

Technical assistance will be provided to classroom teachers for the installation and use of peripheral equipment.

### **7.3. Special Needs**

The district will provide devices and software that assist special needs students with learning such as voice recognition and adaptive input and output devices. IEP's include and direct needed purchases to meet the needs of exceptional learners. All faculty participate in common training to align access and applications.

## **7.4. Facilitation of Management**

### **7.4.1. Classroom Teachers**

Tools for attendance, grading, scheduling, lesson planning, and seating charts that work with the administrative software will be available to teachers in the classroom.

Software that tracks student performance based on the Standards will be utilized throughout the district.

### **7.4.2. School Administration/Resource Staff**

The current productivity software for scheduling of appointments, e-mail, and conferencing will be upgraded. Every individual will use a single district wide package.

Every school will use the Windows version of the Follett Destiny automated library system.

### **7.4.3. Central Office Staff**

There will be a system-wide electronic purchase ordering system. Training will be supplied for individuals who need to use this system.

### **7.4.4. Network Administration**

The district wide area network will be set up as a cloud that will be controlled internally with a one connection to the Internet.

Network management software will be used to manage traffic on the network, monitor hardware connectivity, and map resources.

The network will be secured from external attack through the use of a firewall. It will be secured internally through the use of rights and permissions. Data on the network will be protected through the use of anti-virus software and daily backup.

Students will be protected from inappropriate sites through the use of a internet filtering system that will be used to monitor activity and block inappropriate sites on the World Wide Web.

## **7.5. Network Management Recommendations**

### **7.5.1. Guiding Principles**

The Coventry Public Schools technology system design must be based on open-system standards. This is necessary in order to meet the following goals:

- Cost-effective systems through vendor independence
- Ability to integrate the widest range of existing equipment
- Maximum flexibility to incorporate emerging technology in the future

Some important standards incorporated in the system include:

- TCP/IP (Transmission Control Protocol/Internet Protocol) internetworking standards
- SNMP (Simple Network Management Protocol)
- IEEE 802.3 and higher Ethernet

Among the issues that affect connectivity decisions are the following:

#### *Security*

Appropriate rights and permissions need to be given to network users based on the roles they have in the district and the resources needed to accomplish their tasks. The creation of a firewall is necessary to prevent attack from the Internet, prevent access to Town resources by students and to monitor and restrict access to inappropriate Internet sites.

### *Resource Availability*

Network resources should take precedence over other purchases. These resources should be made available over the entire network. These resources include hardware and software. Purchasing equipment such as network printers, CD-ROM towers, and servers are to be encouraged. Network-able software and site licensing should also be encouraged over single user licensing.

### *Industry Standards*

Hardware and software should reflect industry standards. The use of these resources is to better prepare students for the marketplace.

### *Wiring*

Plans will include the installation of wiring closets in strategic locations. The network backbone will be fiber-optic. Plans should include future expansion to include voice and video.

### *Network Management*

The purchase of routers, hubs, and switches are part of a plan to manage and segment traffic over each LAN. Management software should be used to control changing needs and configuration of the network.

## **7.5.2. Recommendations**

Add or replace network cabling at each site for compliance with industry standard and optimization of performance.

Replacing the hubs located throughout the District with managed switches with management capabilities that can support a 10/100 Mbps signaling rate.

Segment traffic from the town network and create of firewall to protect resources located at the town and the administration building.

Implementing Microsoft's System Management Server for inventory management and software deployment.

## **7.6. Enhanced Communication**

The voice mail system will be expanded for use by all administration, faculty and staff in the district. A single e-mail system will be purchased for administrators, faculty, staff and students.

## **8. TECHNOLOGY STATUS**

A structured process was undertaken to assess the district's current technological status and needs, to develop a vision, to determine design features of a highly functional wide area network system, and to consider all components needed to serve and support all students and educators. Major needs analysis results include the following findings:

- The WAN needs to be reconfigured to provide security, assess speeds and management in order to deliver services over the network.
- Multimedia workstations for students and educators.
- Equipment is needed for gathering, organizing, and analyzing data
- Software is needed to provide means of electronic communication and presentation
- Industry standard software and hardware is needed to provide students with skills that they can take to the workplace.

- Training in all areas of technology is needed for educators in order for technology to be integrated into the curriculum.

## **8.1. Administrative Technology and Support Services**

### **8.1.1. District Administration**

Central Office workstations will be updated during the summer of 2008. The systems run Windows XP Professional and use Office 2007. Business and Personnel use HTE Phoenix's payroll, accounts payable, and personnel systems. These systems rely on Microsoft Access 2.0 which is a 16-bit application. The Town and the school department are linked by a T1 so that payroll and accounts payable can be sent for check writing. District administrators have Coventry Public Schools email accounts and are moving toward Outlook and Outlook Web Access as their mail client. School Administration

The District Utilizes the state approved student management system, SchoolMax, to manage student data. This web based application is a relational database that is district/state wide.

### **8.1.2. Special Education\Special Services**

All specialists, regardless of their school of operation, have access to internet-connected computers.

## **8.2. Instructional Technology**

### **8.2.1. Classroom Instruction**

Every Elementary school has a computer in each instructional classroom. The high school has four business labs that are used to teach the MSOffice Suite, typing, desktop publishing and web design.. Most high school classrooms have at least one network connection, but lack a sufficient number of workstations. Most elementary and middle school classrooms has at least one workstation with network and Internet access.

### **8.2.2. Media Centers**

Every school has a computer lab in the media center. Each school has a different number of computers in their media center lab, depending on the area available.

All Schools utilize Follet Destiny library software so students have access to the collection. Student can search the collection using Follett's online tools.

## **8.3. Network Technology**

### **8.3.1. Network Administration**

There are 2.5 technicians. They are responsible for managing the infrastructure of the network by overseeing the installation of network cabling, hubs and other connectivity devices. They configure the servers to provide services, backup, and virus protection. They collectively manage the resources on the network. They are responsible for the general operation of all workstations, printers, and peripherals at each school. They are responsible for the integrity and security of data on the network.

### **8.3.2. Network Configuration**

The Wide Area Network (WAN) is comprised of eight Local Area Networks (LAN). They are comprised of Coventry High School, The Alan Shawn Feinstein Middle School of Coventry and, six grammar schools. All elementary schools have a full T1 connection to a community frame-rely cloud. Our POP (point-of-presence) is located at the high school. The high school has a full DS3connection to RINET, the district's ISP.

### **8.3.3. Operating Systems**

All servers run Windows 2003. All workstations have been upgraded to Windows 2000 or XP Professional. All Macintosh systems have been upgraded to OSX.

### 8.3.4. Wiring

The high school has five wiring closets. Four IDF's are connected to a MDF located in the library. Each IDF has three fiber cables connected to the MDF. The Alan Shawn Feinstein Middle School of Coventry has five wiring closets connected by fiber.

Most elementary schools utilize a 12-port switching-hub connected to the router that provides connections to hubs located in various classrooms. Most of these hubs are daisy-chained however some are not. All elementary school classrooms are wired for four (4) RJ-45 connections located in four-port surface mount boxes. Oak Haven and Western Coventry have begun the development of centralized wiring closets for all new network drops. The new Washington Oak School has four wiring closets. The closets have fiber connections to the MDF located outside the library.

### 8.3.5. Active Equipment

Most active equipment is hubs. These hubs are placed in classrooms and labs in an extended star configuration. There are a number of old US Robotics switches located throughout the district.

TCP/IP is the sole protocol on the network. DHCP (Dynamic Host Configuration Protocol) services have been configured on each domain controller. WINS (Windows Internet Naming Service) and DNS (Domain Naming Service) are used for name resolution.

### 8.3.6. Servers

All servers run Windows 2003 Server. There are servers that provide file-sharing, printing, web services, and mail services.

The network is configured for virus protection for files and email.

### *Workstations*

	P II's	P III's	P IV's	Mac's
<b>Blackrock</b>				
Administration	0	0	1	
Instruction	0	21	48	
Media Center	0	0	10	
<b>Subtotal</b>	<b>0</b>	<b>21</b>	<b>59</b>	<b>0</b>

#### Hopkins Hill

Administration	0	0	1	
Instruction	0	10	60	
Media Center	0	3	1	
<b>Subtotal</b>	<b>0</b>	<b>13</b>	<b>62</b>	<b>0</b>

#### Oak Haven

Administration	0	0	1	
Instruction	5	27	56	
media center	10	0	0	
<b>Subtotal</b>	<b>15</b>	<b>27</b>	<b>57</b>	<b>0</b>

Tiogue

Administration	0	0	1	
Instruction	10	4	44	
Media Center	0	0	9	
<b>Subtotal</b>	<b>10</b>	<b>4</b>	<b>54</b>	<b>0</b>

Washington Oak

Administration	0	0	1	
Instruction	0	31	95	
Media Center	0	2	8	
<b>Subtotal</b>	<b>0</b>	<b>33</b>	<b>104</b>	<b>0</b>

Western

Administration	0	0	1	
Instruction	4	37	60	
Media Center	0	0	15	
<b>Subtotal</b>	<b>4</b>	<b>37</b>	<b>76</b>	<b>0</b>

Feinstein Middle School

Administration	0	0	5	
Instruction	0	18	282	
Media Center	0	0	37	
<b>Subtotal</b>	<b>0</b>	<b>18</b>	<b>324</b>	<b>0</b>

Coventry High School

Administration	0	0	7	
Instruction	113	150	437	35
Media Center	0	0	25	
<b>Subtotal</b>	<b>113</b>	<b>150</b>	<b>469</b>	<b>35</b>

### 8.3.7. Printing

Every school has at least one networked high-speed laser printer in the media center and one in the main office. Several other instructional and non-instructional areas throughout every building are similarly equipped.

### 8.3.8. Network Management

The district uses the standard Windows 2003 server management tools to manage network resources.

### **8.3.9. Maintenance of Equipment**

The District technicians have the primary responsibility to repair and maintain computer workstations.

**NOTE:** Coventry Schools developed a Capital Improvement Study Team Report that has been widely disseminated including the Town Council. Together with a Strategic Plan with Strategic Targets for results in 3 years, these combined documents direct annual budgeting and long range budget forecasting. A recent 3-year lease/purchase was co-funded by Town and Schools to provide the necessary technology to prepare classes at grades 5, 8 and 12 for students to demonstrate required technology proficiencies by 2008. The related CIST report and Strategic Plan are district-based plans but are not appended to this document.