

Jamesville DeWitt Central School District

Comprehensive Technology Plan 2009-2012



Submitted to
Jamesville-Dewitt Central School District Board of Education
by the District Steering Committee

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Vision for Technology

We believe that people are empowered by their independent and cooperative use of information technologies and that they are united by opportunities to share resources and communicate in our local and global communities. In this information age, it is essential that Jamesville-DeWitt Central School District commit to preparing its students to work in an evolving, information-rich, global community. It is critical that students and staff attain proficiency with the tools of information technology and effectively adapt to a constantly evolving technology environment. All students and staff must be skilled in using these tools to obtain, manage, and evaluate information, to communicate, and to solve problems.

Educators must combine and integrate these tools with new models of teaching that acknowledge each student's individual learning needs and help ensure that each student has the opportunity to become a life-long learner and achiever.

Vision Statements

The District has identified five strategic areas upon which to focus as part of its strategic plan. For each area, specific vision statements provide description and direction for the use of technology.

Strategic Area 1: Educational Program

1. Teachers utilize instructional technology in the teaching-learning process.
2. Teachers use technology for instructional planning and management.
3. K-12 technology benchmarks for students are fully articulated, coordinated, and implemented.
4. A variety of compatible software is available in all classrooms.

Strategic Area 2: Organizational Structure

1. Staff use appropriate, innovative applications to facilitate the exchange of information.
2. Staff use technology to communicate with students, parents, and colleagues.
3. Staff use technology for administrative tasks.

Strategic Area 3: Professional Excellence

1. A comprehensive staff development program using a variety of training models, will be provided and utilized, as needed, by every staff member for the development of technology literacy skills and curriculum integration methods.
2. Staff will be prepared to use technology effectively.

Strategic Area 4: Community Support

Members of our school community will communicate effectively and efficiently with one another using electronic and web-based methods.

Strategic Area 5: Resources

1. There will be wide spread availability of information resources and various technological formats for all staff and students.
2. All staff and students will have access to up-to-date hardware, multimedia resources, telecommunications networks, and distance learning capabilities to support learning.
3. All staff will have access to up-to-date hardware, software, multimedia resources, telecommunications networks, and online records to support effective educational practices.
4. All students will have adequate hands-on technology time to complete learning tasks as well as knowledge of how and where to access technology during non-school hours.
5. All staff and students will have timely access to knowledgeable technology support staff.

The Current State of Technology

The District's first comprehensive technology plan was approved in 1995. Since that time Jamesville-DeWitt Central School District has undergone many changes and is in the process of undergoing even more change in the use of technology to support teaching, learning, and administrative functions. The plan identified five specific areas:

- Classroom instructional technology
- Technology for administrative support
- Development of local and wide area networks
- Staff Development
- Technology support and coordination-personnel

Strategically, the plan called for "growing" each of these areas concurrently. Increasing capacity in one without the others would prevent the District from achieving its goal of effective use of technology to support teaching/learning and administrative functions. It was also a strategic decision to fund the plan within the operational budget, increasing the financial commitment to technology gradually as opposed to a one-time large infusion of resources through a referendum. Some funds from previous capital improvement projects were used to enhance network infrastructure and instructional technology. For 2008-2009 the District allotted approximately \$1,000,000 or 2.2% of the operational budget for Instructional Technology. For the past fourteen years, the District has extended that basic plan and approach to improve the District's use of technology each year.

Infrastructure

The School District is connected to the Internet through the Central New York Regional Information Center (CNYRIC/OCM BOCES) via a fiber connection. The CNYRIC connects to the Internet through multiple fiber connections. The High School, Middle School, Elementary Schools, and Transportation & Maintenance Center are interconnected through a fiber optic network that was constructed in 2005.

All five buildings have comprehensive networks. All classrooms, labs, libraries, offices, and other instructional areas have at least one connection to the network. Many classrooms have multiple connections. Labs and libraries have multiple connections. All common areas (cafeterias, gymnasiums, large group rooms) are also wired. The network is in the process of being upgraded to a speed of 1000 megabits per second. The network is secured through the CNYRIC with a firewall and filtering systems for Internet access and email.

Wireless networking is prevalent in the District. All schools have a significant number of wireless laptop computers. Some of these computers are housed in mobile labs, some are assigned to teachers, and some are assigned to classrooms. Apple's AirPort® technology is used for the wireless network.

Computer Classrooms (labs)

Each school in the District is a wireless community where both staff and students can access the internet and District servers from anywhere in the building.

At the elementary school level, each teacher is assigned a laptop computer. All elementary buildings access web-based software and data bases via BOCES or independent vendors. Common subscriptions

include BrainPop®, Achieve3000®, RTIM Direct®, FastForWord®. The automated libraries provide access to literary and research databases in each building.

Moses DeWitt Elementary has a recently renovated computer classroom consisting of approximately 24 computers and all classrooms are equipped with networked computers. In addition, teachers have access to peripherals such as projectors, digital cameras, SmartBoards, Senteo interactive response systems, document cameras, laptop carts, and MP3 players to enhance teaching and learning. FastForWord is accessed through a computer cluster in the Academic Intervention Services lab. All students have scheduled computer integration time over a 6-day period. Computer applications (e.g. word processing, and math, ELA, science and social studies support) are the focus at the primary level. Grades 3 and 4 also utilize the lab to integrate technology into all aspects of the curriculum with an emphasis on using web based programs and databases.

At Jamesville Elementary, all classrooms are equipped with networked computers. Desktop computers are available to students in K-1 and students in grades 2-4 have access to a combination of desktop and laptop computers. Jamesville Elementary also has a computer lab with enough computers for a full class of students. All teachers use the computer lab as necessary to instruct their students to use hardware and software tools to support student learning. The lab also has a SmartBoard®, projector, scanner, and two document cameras, which teachers are able to utilize in the lab or classroom. In addition to the main lab, a smaller computer lab consisting of six computers provides a quieter area for students to work with the FastForWord® program. Three mobile laptop carts allow technology to be incorporated in all facets of the teaching and learning process.

Tecumseh Elementary has a computer classroom consisting of 25 computers. This lab also has a SmartBoard® and LCD projector, scanner, and digital camera. In addition, 15 laptops are available via mobile cart for use by students throughout the building. Students in grades kindergarten through four attend the lab with their teachers on a floating schedule. Teachers engage students in a variety of activities in the lab, ranging from word processing and PowerPoint skills, a wide variety of educational websites, along with access to the District's network file server. There is limited software on these computers due to the growth of educational websites. The kindergarten classrooms each house two to three desktop computers and two laptop computers. Also, kindergarten classrooms have ready access to additional laptop computers. In grades one through four, each of the classrooms house one to two desktop computers and five laptop computers. Special Education classrooms house eight laptop computers for the FastForWord® program, another laptop and five desktop computers for individual student use. Academic Intervention Services classrooms houses four desktop computers while both English as a Second Language and Speech classrooms house two desktop computers. The Library houses six laptop computers and an LCD projector. The Art classroom has a scanner and the Music classroom has an LCD projector. Tecumseh also has two SmartBoards®, four document cameras, twelve projectors and a number of digital cameras shared by all classrooms.

The Middle School has two computer labs that consist of 14 eMacs® and 25 iMacs®, as well as five mobile carts each with a classroom set of laptop computers. The Technology classrooms have 8 iMacs® and 24 PCs. The library has 15 iMacs®, 3 PCs and a SmartBoard®. Every special education room and art room has a minimum of 2 Apple® or PCs computers. Every teacher and administrator has a PC laptop, iBook® or MacBook®. In addition, teachers at the middle school have access to a number of peripherals including SmartBoards®, digital projectors, visualizers, digital cameras, scanners, color printers and black & white printers to enhance teaching and learning. Teachers use the labs for integration projects in a variety of subject areas to support student learning. Students use the lab for individual assignments and homework.

The High School has seven computer classrooms with an average of 20 computers in each, as well as several other places in the building where students and teachers have access to computers. Four classrooms are dedicated to the technology program which includes Project Lead the Way, Graphic Communication, Media Production, Architecture and Computer Science. Three additional labs are used by teachers for class integration projects and by students for individual projects and assignments. Another of these labs is staffed full-time to assist students and teachers with instructional technology. The third lab is a mini-lab with 12 computers. In addition to the computer classrooms, each classroom and office in the building is equipped with a networked computer for student and teacher use. Further, three “mobile-lab” carts are available for teachers to sign-out and use in their classrooms. Students may also access the 12 computers in the library hub for research or work on projects and papers. Teachers, on the other hand, may take advantage of the 5 computers in the Teacher Workroom reserved exclusively for their use. Throughout the building, other hardware such as LCD projectors, SmartBoards® and printers are used by teachers and students to enhance the learning process.

Electronic Information Access

All five libraries are fully automated using Follett’s Destiny® system. The system may be accessed at any computer with Internet access. This enables digital searching of the library media center resources, reserving materials using the automated system, and integrating library media resources into the curricular areas in all buildings. Additionally, at the Middle School and High School, the system is used by staff and students to create bibliographies for research using the automated system as well as integration of local library media center resources with global resources via the Internet. Access to electronic databases that provide indexing, abstracts, and full text periodical articles is also available.

Classroom Instructional Technology

Elementary School Level

In all classrooms, a variety of software is available that both reinforces and expands the depth and breadth of the curriculum. Primarily individual and small groups of students use it. Students learn basic technology components, introductory keyboarding skills, and computer applications, and are introduced to multimedia technologies. Some teachers use projects to introduce students to the Internet. There is regular integration of word processing for writing and reading development and use of desktop publishing in the formal writing process. Fourth grade students learn to navigate the school network to save their work. Students have the opportunity to engage in projects using multimedia equipment presentation software, and web based applications. Microsoft Office® applications (e.g. Word® and PowerPoint®) are some of the currently used software. A small but growing number of teachers use these for class presentations. Kidspiration®, FastForWord®, and Achieve 3000® software is available for use by teachers at various levels as appropriate.

Middle School Level

A variety of software is available that both reinforces and expands the depth and breadth of the curriculum in all disciplines. Technology is used by teachers for whole-group instruction and for individual and group student work. Students learn to navigate the school network and to appropriately use the Internet for email, research, communications and presentations. Students use the integration of the Internet, presentation software such as PowerPoint®, and/or multimedia equipment, word processing and desktop publishing on a regular basis in the formal research and writing process.

Faculty, staff, and administration use several web-based applications to increase communication and management capabilities. Guidance counselors and administrators use the BOCES SIS system for scheduling and creating report cards. Teachers use mygradebook.com to record grades and make grade information available for students and parents. Finally, many teachers and administration have web pages to foster communication and provide necessary information.

High School Level

Technology plays a large role in the High School both for teaching and learning as well as for administrative functions. Computer applications use both Windows® and Apple® platforms. Units in the course focus on word processing and data processing for specific content course assignments, TI-84+® graphing calculator problem solving for math and science, using the Internet to collect data for content classroom research and facilitating student use of software and hardware to complete content course projects. Additionally, students become more proficient in their use of email, an electronic grade book (such as mygradebook.com®) and presentation software (such as PowerPoint®). There are also a number of elective courses available in technology education including a five-course Project Lead the Way sequence, a computer science sequence and other technology electives such as Architecture, Graphic Communication and Media Productions.

Email has become the primary method for communication within the school. Teachers use email to communicate with parents. Students often use email to transfer files between school and home as well as to communicate with teachers.

Faculty and staff use several web-based applications to streamline tasks and make information more readily accessible for those involved. Faculty all use mygradebook.com® to record grades and make grade information available for students and parents. The guidance department uses SIS for scheduling and works with college-bound seniors to use the on-line common application.

Internet Research

The English Department employs extensive lessons and units across the grade levels on Internet research including, critical analysis of sources, source citation and proper use of sources for essays. In addition, Internet research is addressed with students by the staff of the Learning Center. The LOTE classes use the Internet to review foreign language news sites such as the Paris newspaper, *Le Monde*. Students also learn to navigate different cultural and foreign language sites. Science teachers utilize dedicated websites, such as Blackboard.com® and the physics website for student assignments, tutorials and information exchange. The math department uses the explorelearning.com® website to supplement their textbooks in Algebra and Geometry.

Databases

Students learn to use databases through the Learning Center / Library. The LC has the ProQuest® database which gives students access to articles from academic journals and mainstream periodicals. Students also have access to the SIRS database which gives them access to articles on public policy, government, and social issues. Our library is also in partnership with the Onondaga County Library System. We are able to access the County Library databases through student library accounts. Each student, therefore, is given an account with the County Library.

Word Processing

English and social studies teachers require most essay assignments to be word processed. Technology has become an essential component for managing non-academic services at the school as well as school publications. The school newspaper and yearbook are also designed and edited exclusively on computers using desktop-publishing software.

Presentations

Presentation software such as PowerPoint® is used by students and by teachers for in-class work. Teachers use tools such as PowerPoint® or the SmartBoard® to make lessons more visual and interactive. Students regularly use PowerPoint and® or multimedia equipment to complete projects. Language students are given CDs or DVDs with interactive multimedia content to work on outside of class. Students also make use of digital cameras and video cameras in art and media courses and to enhance projects and presentations.

Spread Sheets and Spreadsheet Analysis

Science uses spreadsheets across the curriculum for data tracking and data analysis. Spreadsheets are used to great extent in Economics, a required course for graduation, to analyze current market trends and for the stock market game.

Technology for Administrative Support

All administrators, school counselors, nurses, clerical staff, and school psychologists have computer workstations. Email is a frequently used vehicle for communication among administrative staff. The Student Information System (SIS) supported by BOCES is the relational database used to manage the majority of our student data. IEP Direct®, a web-based interface with SIS, is used to manage information related to students with disabilities. Similarly RTM Direct® is used to manage information related to students receiving Academic Intervention Services (AIS).

WinCAP® is the financial system and is hosted by BOCES. The maintenance staff uses the Insight energy management system and the cafeteria staff has uses NutriKids® to manage the delivery of its services. Some data such as transportation information are kept in other databases. Student grade reporting in all grades is web-based and hosted by BOCES. One component of physical security in the schools is a network-based application for proximity card access to selected entrances.

Staff Development

Staff development to support the development of technology literacy and curricular integration strategies has been a priority for a number of years. Many opportunities are provided for training in specific skills, applications, and curricular integration both generally and by specific discipline. These take the form of conferences, staff development days, after-school, weekend and summer workshops, Web-based courseware, as well as hands-on support for a specific project provided by District and building technology staff. The majority of training is elective. Surveys of staff indicate a wide range of technology expertise. Targeted staff development opportunities to meet the needs of individual and small groups of teachers are created based on these results. [Survey results are in appendix A.] Faculty members and the JD/SU Teaching Center use the Electronic Registrar Online (ERO®) system to enroll in and track professional development workshops.

Technology Support and Coordination

The District technology staff has increased in the past few years as the infrastructure, hardware, and use of technology has been growing. [There is an inventory of current equipment in Appendix B.] On-site support and District-wide coordination have been critical to effective use of technology for instructional and administrative functions. The District staff consists of a technology director, a network specialist, a network assistant, and four teaching assistants. These seven individuals do most of the installation and support of the network infrastructure. They support hardware, software, systems, and services in all five schools and the Transportation & Maintenance Center. Most technical concerns are resolved in-District. The CNYRIC/BOCES provides support for concerns beyond the expertise or access of our staff. These individuals provide professional development in workshop, small group, and, one-to-one settings.

Additionally, there is a teaching assistant in each building to provide direct instruction to students, as well as support and consultation for classroom teachers in technology application and integration. These teaching assistants also provide technical support commensurate with their skill and experience levels.

Technology Standards and Benchmarks for Students

These standards¹ serve as the foundation for the integration of technology into instruction and learning for students. Although they appear here in isolation, they are meant to clearly define our expectations for students. They will be implemented within all curricular areas and connected to the content of the area. Level performance indicators below each standard reflect examples of experiences with technology and digital resources in which students engage.

Standard 1: Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

- Understand and use technology systems
- Select and use applications effectively and productively
- Troubleshoot systems and applications
- Transfer current knowledge to learning of new technologies

Level 1 (Grades K-4)

Prior to the completion of Grade 4 students will:

- A. Use input devices and output devices to successfully operate current technologies
 - Open/close a file, navigate using scroll bars, arrow keys, special keys, and mouse
- B. Communicate about technology using developmentally appropriate and accurate terminology
 - Monitor, keyboard, printer, mouse, CD, and DVD
 - Demonstrate the ability to navigate in virtual environments such as electronic books, simulation software, and Web sites
- C. Use multimedia resources to support learning
 - Interactive books, educational software, elementary multimedia encyclopedias
- D. Understand the function and purpose of application programs
 - Start and stop applications
 - Open and close files within applications
 - Understand the correlation between programs and associated file (document) types

Level 2 (Grades 5-8)

Prior to the completion of Grade 8 students will:

- A. Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively
 - Identify operating system, hard drive, memory
 - Access information on size and format of a file, create folders on local hard drive
 - Perform efficient keyboarding technique

¹ Adopted from the National Educational Technology Standards for Students – 2007

- Run multiple applications simultaneously, switching between them
 - Operate scanner, digital camera, camcorder
- B. Discuss common uses of technology in daily life and advantages and disadvantages those uses provide
- C. Independently apply previous knowledge of digital technology operations to analyze and solve current and routine hardware and software problems
- Save a file to desktop, the hard drive, external storage spaces, and server
 - Select a printer and print a document with appropriate page setup and orientation
 - Integrate a variety of file types to create and illustrate a document or presentation
- D. Demonstrate an understanding of concepts underlying hardware, software, and connectivity, and practical applications to learning and problem solving
- Properly format and style word processed document
 - Insert images from other objects into word processed document
 - Describe structure and function of database and identify components
 - Create a database, defining field formats and adding new records
 - Perform simple operations in a database
 - Describe structure and function of spreadsheet and apply formatting features
 - Create an original spreadsheet, entering simple formulas
 - Produce simple charts from spreadsheets
 - Using e-mail, create, send, and receive a message with attachments (monitored by teacher)

Level 3 (Grades 9-12)

Prior to the completion of Grade 12 students will:

- A. Make informed choices among technology systems, resources, and services to produce a variety of products using the advanced features of personal productivity software
- Demonstrate file management skills
 - Resolve commonly occurring error messages as well as simple hardware and software problems as they occur
 - Identify and use methods for transferring, downloading, and converting graphic, sound, and video files. Use different graphic file formats where appropriate. Manage word-processed documents
 - Use a variety of external peripherals and understand how they connect to a computer
 - Create a multimedia presentation, desktop-published report, or Web page that incorporates data from other files
 - Create and manipulate illustrations using a drawing or painting program
 - Identify capabilities of technology resources and understand how they can be used for lifelong learning
 - Configure and troubleshoot hardware, software, and network systems to optimize their use for learning and productivity

Standard 2: Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

- Advocate and practice safe, legal, and responsible use of information and technology
- Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
- Demonstrate personal responsibility for lifelong learning
- Exhibit leadership for digital citizenship

Level 1 (Grades K-4)

Prior to the completion of Grade 4 students will:

- A. Work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom
- B. Demonstrate positive social and ethical behaviors when using technology
 - Develop understanding of the school's rules for safe and ethical Internet use
 - Explore practices for evaluating Web sites
 - Demonstrate the safe and cooperative use of technology
- C. Practice responsible use of technology systems and software
 - Follow classroom rules for responsible use of computers and the internet
- D. Discuss common uses of technology in daily life and advantages and disadvantages those uses provide
 - Develop understanding of how the computer is a tool for learning

Level 2 (Grades 5-8)

Prior to the completion of Grade 8 students will:

- A. Demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society
 - Debate the effect of existing and emerging technologies on individuals, society, and the global community
- B. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse
 - Explain and demonstrate ethical and legal behavior in copying files, applications, and media
 - Explain proper e-mail etiquette
 - Write correct citations for text and images gathered from electronic sources
 - Understand that use of materials is limited by the fair use rule of copyright law

- C. Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use
- Explain and demonstrate understanding of classroom rules regarding responsible use of computers and the internet including responsible behavior around equipment, respect for other people's work, and appropriate collaborative behavior
 - Explain potential problem of computer viruses and exercise caution in opening e-mail attachments, files, and programs from unknown sources
 - Explain safe practices for sharing personal information via e-mail and the Internet
 - Explain how media and technology can be misused to distort or exaggerate information
 - Practice injury prevention by applying a variety of ergonomic strategies when using technology

Level 3 (Grades 9-12)

Prior to the completion of Grade 12 students will:

- A. 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
- Identify ways in which technology is used in the workplace and in society
- B. Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole
- C. Create media rich presentations for other students on the appropriate and ethical use of digital tools and resources
- D. Demonstrate and advocate legal and ethical behaviors among peers, family, and community regarding the use of technology and information
- Explain laws restricting use of copyrighted materials on the Internet
 - Explain how to evaluate electronic sources of information
 - Model legal and ethical behaviors when using information and technology by properly selecting, acquiring, and citing resources

Standard 3: Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

- Apply existing knowledge to generate new ideas, products, or processes
- Create original works as a means of personal or group expression
- Use models and simulations to explore complex systems and issues
- Identify trends and forecast possibilities

Level 1 (Grades K-4)

Prior to the completion of Grade 4 students will:

- A. Create developmentally appropriate multimedia products with support from teachers, family members, or student partners
 - Collaborate with classmates and teacher in creating a multimedia presentation to communicate learning with others
- B. Use a variety of media and technology resources for directed and independent learning activities
 - Use digital-imaging technology to modify or create works of art for use in digital presentation
- C. Use technology resources for problem solving, communication, and illustration of thoughts, ideas, and stories
 - Collaborate with classmates to use teacher-selected Web sites
 - Produce a media-rich digital story about a significant local event based on first person interviews
 - Collaborate with classmates and teacher to send and receive class e-mail messages
 - Use simulations and graphical organizers to explore and depict patterns of growth such as the life cycles of plants and animals

Level 2 (Grades 5-8)

Prior to the completion of Grade 8 students will:

- A. Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration and innovation, and learning throughout the curriculum
 - Organize information that is collected using a variety of tools
 - Describe and illustrate a content-related concept or process using a model, simulation, or concept mapping software
 - Manipulate data using charting tools and graphic organizers to connect ideas and organize information
- B. Use technology tools for creative individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom
 - Create original animations or videos documenting school, community, or local events
 - Integrate a variety of file types to create and illustrate a document or presentation
 - Identify appropriate applications for a classroom project

Level 3 (Grades 9-12)

Prior to the completion of Grade 12 students will:

Use technology tools and resources for managing and analyzing personal/professional information

- Import/export and link data between word-processed document and other applications
- Import/export and link data between database and other applications
- Design a Web site that meets accessibility requirements
- Use advanced formatting features of a spreadsheet application
- Design, develop, and test a digital learning game to demonstrate knowledge and skills related to curriculum content

- Define and use functions of a spreadsheet such as sort, filter, and find
- In a spreadsheet application, use various number formats as appropriate
- Know how to select and use search engines
- Understand the differences between search engines
- Explain effective search strategies to locate and retrieve electronic information
- Share files as attachments in an e-mail message

Standard 4: Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

- Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
- Communicate information and ideas effectively to multiple audiences using a variety of media and formats
- Develop cultural understanding and global awareness by engaging with learners of other cultures
- Contribute to project teams to produce original works or solve problems

Level 1 (Grades K-4)

Prior to the completion of Grade 4 students will:

- A. Gather information and communicate with others using telecommunications, with support from teachers, family members, or student partners
 - Engage in learning activities with learners from multiple cultures through e-mail and other electronic means
 - In a collaborative group, use a variety of technologies to produce a digital presentation or product in a curriculum area
- B. Use telecommunications and on-line resources (e.g., email, online discussions, web environments) to participate in collaborative problem-solving activities to develop solutions or products for audiences inside and outside the classroom

Level 2 (Grades 5-8)

Prior to the completion of Grade 8 students will:

- A. Design, develop, publish and present products such as Web pages and DVD's using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom
 - Use collaborative electronic authoring tools to explore common curriculum content from multicultural perspectives with other learners
- B. Collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom

- Communicate results of research and learning with others using the most appropriate technical tools
- Participate in a cooperative learning project in an online learning community

Level 3 (Grades 9-12)

Prior to the completion of Grade 12 students will:

- A. Use technology tools and resources for communicating personal/professional information
 - Import graphics, photos, and other media into report or presentation, citing sources appropriately
 - Create multiple links among various pieces of information residing in different applications
- B. Routinely and efficiently use on-line information resources to meet needs for collaboration, publications, and communications
 - Integrate electronic research results into a research project
 - Demonstrate the function of electronic conferencing tools such as social networking communities, listserv, electronic classrooms, and interactive video
- C. Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works
 - Collect, organize, analyze, and graphically present data using the most appropriate tools
 - Present information, ideas, and results of work using any of a variety of communications technologies
 - Create and publish an online art gallery with examples and commentary that demonstrate an understanding of different historical periods, cultures, and countries

Standard 5: Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

- Plan strategies to guide inquiry
- Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
- Process data and report results

Level 1 (Grades K-4)

Prior to the completion of Grade 4 students will:

- A. Recognize and understand that technology resources are a source of information
 - Use information from a variety of digital reference sources
 - Access school library materials through circulation system

- Find and evaluate information related to a current or historical person or event using digital resources
- Recognize that the internet is a source of information

Level 2 (Grades 5-8)

Prior to the completion of Grade 8 students will:

- A. Use content-specific tools, software and simulations to support learning and research
 - Identify and use navigation features of browser and basic elements of a Web site
 - Employ data-collection technology such as probes, handheld devices, and geographic mapping systems to gather, view, analyze, and report results for content related problems
 - Select and apply digital tools to collect, organize, and analyze data to evaluate theories or test hypotheses
 - Explore and develop understanding of how to gather information from a variety of electronic sources, including teacher-selected Web sites, digital storage sources and automated card catalog
- B. Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems.
 - Use search engines effectively to find relevant, unbiased, and current information on a subject
 - Recognize bias in digital resources while researching an environmental issue with guidance from the teacher
 - Identify and investigate a global issue and generate possible solutions using digital tools and resources
 - Evaluate digital resources to determine the credibility of the author, publisher, and the timeliness and accuracy of the content

Level 3 (Grades 9-12)

Prior to the completion of Grade 12 students will:

- A. Evaluate technology-based options, including distance education, for lifelong learning
- B. Routinely and efficiently use on-line information resources to meet needs for research and productivity
- C. Select and apply technology tools for research, information analysis, problem solving, and decision-making in content learning based on their efficiency and effectiveness
 - In conducting research use all appropriate electronic sources
 - Routinely evaluate Web sites for authenticity when using them

Standard 6: Critical Thinking, Problem Solving, and Decision Making

Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

- Identify and define authentic problems and significant questions for investigation
- Plan and manage activities to develop a solution or complete a project
- Collect and analyze data to identify solutions and/or make informed decisions
- Use multiple processes and diverse perspectives to explore alternative solutions

Level 1 (Grades K-4)

Prior to the completion of Grade 4 students will:

- A. Use technology resources for problem solving, communication, and illustration of thoughts, ideas, and stories
 - Independently apply digital tools and resources to address a variety of tasks and problems.
 - Identify, research, and collect data on an environmental issue using digital resources and propose a developmentally appropriate solution

Level 2 (Grades 5-8)

Prior to the completion of Grade 8 students will:

- A. Use technology resources for problem-solving, self-directed learning, and extended learning activities
 - Independently apply digital tools and resources to address a variety of tasks and problems.
- B. Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems
 - Conceptualize, guide, and manage individual or group learning projects using digital planning tools with teacher support
- C. Demonstrate an understanding of concepts underlying hardware, software, and connectivity, and practical applications to learning and problem solving
 - Gather data, examine patterns, and apply information for decision making using digital tools and resources

Level 3 (Grades 9-12)

Prior to the completion of Grade 12 students will:

- A. Investigate and apply expert systems, intelligent agents, and simulations in real-world situations
 - Demonstrate how specialized technology tools such as simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software can be used for problem-solving, decision-making, and creativity

Technology Standards for Teachers

The classroom teacher is the key person in assisting students to develop the essential knowledge and skills at each level. Thus, all teachers must take responsibility to help their students develop technology skills. It is critical that all classroom teachers have the skills and knowledge to provide their students with the opportunity to use technology to learn and communicate. To assist students in the achievement of District technology standards and benchmarks, teachers must attain the following standards²:

1. Facilitate and Inspire Student Learning and Creativity

Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation.

2. Design and Develop Digital-Age Learning Experiences and Assessments

Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the Standards and Benchmarks for Students. Teachers:

- A. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity

3. Model Digital-Age Work and Learning

Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. Teachers:

- A. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations
- B. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats

4. Promote and Model Digital Citizenship and Responsibility

Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices. Teachers:

- A. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources

² Adopted from the National Educational Technology Standards for Students – 2007

5. Engage in Professional Growth and Leadership

Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Teachers:

- A. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning

Technology Goals

1. Every student will use technology to access, analyze, and evaluate information in ways that develop higher order thinking skills and promote information literacy, increase their ability to use and adapt to current and future technology as a tool in problem solving, and support their confident use of the technology skills they will need for success in their future study and employment.
2. Every teacher will meet technology competency standards that, supported by appropriate staff development, ensure their ability to use learning technologies effectively to support student achievement and to communicate with students, colleagues, and parents.
3. Every administrator will be technologically literate; will provide leadership in integrating technology into curriculum, instruction, and student learning activities, strengthening means of communication, and accessing technology resources in support of management functions.
4. Parents will have the opportunity to develop awareness of District curriculum through access to web-based information about their children's educational program located on the District website.

Strategies to Achieve Technology Goals

Staff Development

Staff development to support the development of technology literacy skills as well as curricular integration skills and strategies continues as a high priority. All teachers must be proficient in the use of technology if we expect all students to develop this skill and knowledge. It is critical that the staff development program concurrently meets the needs of novice as well as staff expert in the use of technology. The most recent teacher survey results provide very specific information about the level of technology expertise among our teaching staff. We will provide staff development opportunities focused on the needs of specific groups of teachers and/or individuals. These opportunities will include training in the use and instructional integration of specific hardware, peripherals, and software for both instructional and management purposes. Opportunities will be provided to support the integration of technology into all curricular areas. Staff development is most effective when there is immediate opportunity for practice and application of newly acquired skills. Ongoing follow-up and support is critical to skill development, maintenance, and growth. Therefore, it is important to continue to use the technology committees at each level as a forum for the development of on-site staff development to the greatest extent possible. We remain committed, however, to a comprehensive delivery system to meet the diverse needs of staff.

A variety of venues will be available year round and will include:

- Conferences during the school day, after school, weekends, and summer
- BOCES – sponsored workshops
- Hands-on support for specific projects provided by District/building technology staff
- Peer coaching
- Collaboration with educators from other schools, including on-site visits to model settings
- Training opportunities for our staff and by our staff on specific technology integration topics by curriculum area and/or grade level
- Training opportunities offered by the JD/SU Teaching Center
- Individual coaching and mentoring sessions offered during teacher preparation time on topics specific to individual needs

It is expected that all teachers will improve their technology skills by participation in one or more staff development opportunities each year.

Instructional Technology 2009-2012

Elementary School Level

We expect to accomplish these objectives:

1. Increase the use of multimedia technology in the classroom for teachers and students by providing increased accessibility to digital projection in elementary classrooms.
2. Assess and replace obsolete technology on a planned basis.
3. Research and pilot innovative uses of technology to improve student learning.
4. Provide professional development for new and existing resources that enhance learning for all students.
5. Increase student and teacher access to the most current software.

Middle School Level

We expect to accomplish these objectives:

1. Assess and replacing obsolete technology on a planned basis.
2. Increase teacher and student access to interactive whiteboard technology and presentation systems.
3. Provide necessary hardware and software to support Webcasting throughout the building via Intranet.
4. Evaluate the Webcast Initiative
5. Provide and evaluate teacher access to staff development necessary to attain and maintain technology standards for teachers and students.

High School Level

We expect to accomplish these objectives:

1. Increase student access to technology by increasing the number of mobile laptop carts.
2. Increase the availability of multimedia equipment for teacher and student use including, digital projectors, document cameras, and interactive whiteboard technology.
3. Increase availability of teacher laptop units.
4. Identify and replace obsolete technology on a planned basis.
5. Increase professional development for new and existing resources that enhance learning for all students.
6. Increase the availability and use of assistive technology for students with special needs.

Infrastructure

Annual infrastructure improvements are critical to the effective use of technology by staff and students. We expect to accomplish the following objectives as described below.

2009-2010

1. Plan and prepare the move from a public to a private IP network in order to support the increasing number of networked devices.
2. Add 1000 mps network switches to support additional network drops as necessary.
3. Increase bandwidth to provide an efficient network infrastructure.
4. Map the current structure of the wired infrastructure and recommend a future replacement plan.

2010-2011

1. Plan and implement the move from a public to a private IP network in order to support the increasing number of networked devices.
2. Add 1000 mps network switches to support additional network drops as necessary.
3. Analyze bandwidth usage and make recommendations as necessary to provide an efficient network infrastructure.
4. Begin the upgrade of the wired infrastructure.

2011-2012

1. Analyze wireless connectivity in order to provide a more reliable and effective system.
2. Add 1000 mps network switches to support additional network drops as necessary.
3. Analyze bandwidth usage and make recommendations as necessary to provide an efficient network infrastructure.
4. Continue the upgrade of the wired infrastructure.
5. Research the next generation of network switches.
6. Research server virtualization systems and recommend a strategy for implementation in order to supporting server based applications, storage, and current operating systems.

Administrative Use of Technology 2009-2012

All administrators have computer workstations with access to various forms of data used to measure student achievement and to support management.

1. Administrative desktop workstations and laptops will be upgraded as needed.
2. To address the goal of universal access, administrators will prepare information for parents about the accessibility of technology resources throughout the community, including those available through the public library system.

Acquisition Plan

2009-2010: The following equipment should be acquired to meet the plan objectives:

Elementary level

item	quantity	approximate unit cost	cost
laptop computer - Apple	12	\$1,510	\$18,120
desktop computer - Apple	6	\$1,440	\$8,640
digital projector	3	\$695	\$2,085
interactive whiteboard with projector	3	\$3,269	\$9,807
productivity and systems software	18	\$109	\$1,962
Total			\$40,614

Middle School level

item	quantity	approximate unit cost	cost
laptop computer - Apple	11	\$1,510	\$16,610
desktop computer - Apple	14	\$1,440	\$20,160
laptop computer - Windows	1	\$1,510	\$1,510
productivity and systems software	26	\$109	\$2,834
Total			\$41,114

High School level

item	quantity	approximate unit cost	cost
laptop computer - Apple	9	\$1,510	\$13,590
desktop computer - Apple	6	\$1,447	\$8,682
desktop computer - Windows	9	\$920	\$8,280
laptop computer - Windows	3	\$1,510	\$4,530
digital projector	1	\$695	\$695
assistive technology hardware	1	\$1,500	\$1,500
assistive technology software	1	\$320	\$320
productivity and systems software	27	\$109	\$2,943
Total			\$40,540

Infrastructure

connectivity and support (CNYRIC/BOCES)	\$290,032
technology staff (7)	\$336,800
hourly summer work	\$10,000
printing supplies and materials	\$40,000
network hardware	\$29,200
contract services	\$13,000
telephone	\$2,000
state aided hardware - High School	\$14,565
state aided hardware - Middle School	\$13,590
state aided hardware - Elementary Schools	\$15,240
state aided hardware - Nonpublic Schools	\$23,300
Total	\$787,727
Grand total	\$909,995

2010-2011: The following equipment should be acquired to meet the plan objectives:

Elementary level

item	quantity	approximate unit cost	cost
laptop computer	18	\$1,512	\$27,216
desktop computer	3	\$1,447	\$4,341
digital projector	6	\$696	\$4,176
document camera	3	\$642	\$1,926
interactive whiteboard with projector	3	\$3,269	\$9,807
productivity and systems software	21	\$125	\$2,625
Total			\$50,091

Middle School level

item	quantity	approximate unit cost	cost
laptop computer - Apple	18	\$1,512	\$27,216
desktop computer - Apple	6	\$1,447	\$8,682
digital projector	1	\$696	\$696
document camera	1	\$642	\$642
laptop battery	2	\$124	\$248
laptop power adapter	2	\$76	\$152
interactive whiteboard with projector	2	\$3,269	\$6,538
webcast hardware & software	1	\$3,000	\$3,000
productivity and systems software	24	\$125	\$3,000
Total			\$50,174

High School level

item	quantity	approximate unit cost	cost
laptop computer - Apple	5	\$1,512	\$7,560
PLTW computer - Windows	24	\$1,400	\$33,600
digital projector	1	\$696	\$696
interactive whiteboard with projector	1	\$3,269	\$3,269
assistive technology hardware	1	\$1,500	\$1,500
assistive technology software	1	\$300	\$300
productivity and systems software	29	\$125	\$3,625
Total			\$50,550

Infrastructure

connectivity and support (CNYRIC/BOCES)	\$298,000
technology staff (7)	\$354,000
hourly summer work	\$45,000
printing supplies and materials	\$43,000
network hardware	\$20,200
contract services	\$38,000
telephone	\$2,000
state aided hardware - High School	\$14,750
state aided hardware - Middle School	\$13,250
state aided hardware - Elementary Schools	\$15,500
state aided hardware - Nonpublic Schools	\$24,000
Total	\$867,700
Grand total	\$1,018,515

2011-2012: The following equipment should be acquired to meet the plan objectives:

Elementary level

item	quantity	approximate unit cost	cost
laptop computer	24	\$1,512	\$36,288
desktop computer	6	\$1,447	\$8,682
digital projector	6	\$696	\$4,176
document camera	3	\$642	\$1,926
interactive whiteboard with projector	3	\$3,269	\$9,807
productivity and systems software	30	\$124	\$3,720
		Total	\$64,599

Middle School level

item	quantity	approximate unit cost	cost
laptop computer - Apple	25	\$1,512	\$37,800
desktop computer - Windows	3	\$920	\$2,760
digital projector	3	\$696	\$2,088
document camera	3	\$642	\$1,926
laptop battery	4	\$124	\$496
laptop power adapter	4	\$76	\$304
interactive whiteboard with projector	4	\$3,269	\$13,076
webcast hardware & software	1	\$3,000	\$3,000
productivity and systems software	28	\$120	\$3,360
		Total	\$64,810

High School level

item	quantity	approximate unit cost	cost
laptop computer - Apple	10	\$1,512	\$15,120
PLTW computer - Windows	24	\$1,400	\$33,600
document camera	3	\$642	\$1,926
interactive whiteboard with projector	2	\$3,269	\$6,538
assistive technology hardware	2	\$1,500	\$3,000
assistive technology software	2	\$300	\$600
productivity and systems software	34	\$120	\$4,080
		Total	\$64,864

Infrastructure

connectivity and support (CNYRIC/BOCES)	\$304,000
technology staff (7)	\$372,000
hourly summer work	\$12,000
printing supplies and materials	\$46,000
network hardware	\$10,200
contract services	\$40,000
telephone	\$2,000
state aided hardware - High School	\$15,000
state aided hardware - Middle School	\$14,000
state aided hardware - Elementary Schools	\$16,000
state aided hardware - Nonpublic Schools	\$25,000
Total	\$856,200
Grand total	\$1,050,473

Plan Evaluation

It will be the responsibility of the administrative team (building principals, District administrators, and technology coordinator) to annually evaluate the effectiveness of plan implementation. Evaluation activities will include:

- Review of use of technology by staff and students by the elementary, middle school and high school technology committees
 - Analysis of data related to student learning
 - Review of evaluation data from staff development activities
 - Staff, student, and/or parent surveys as appropriate
1. Data concerning staff proficiency in the use and application of technology for instructional and management functions has been obtained. Surveys will be administered on a regular basis to determine individual and collective progress in development of teacher competencies specified in the plan.
 2. Each professional development activity will have an evaluation component to ascertain effectiveness. This information will be collated and reviewed by administrative staff.
 3. Usage data such as logs of computer lab use, use of peripherals will be reviewed by technology committees and administrative staff.
 4. Qualitative data concerning teacher use of technology for instruction and management will be gathered and reviewed by technology committees and administrative staff.
 5. Technical assistance and trouble shooting logs will be reviewed by technology staff.
 6. Parents will be surveyed concerning access to web-based information about their children's educational program and analyzed by administrative staff.
 7. Evaluation data and recommendations will be submitted to the board of education annually.

Appendix A: Inventory

		Jamesville	Moses DeWitt	Tecumseh	High School	Middle School
	Total					
Apple desktop computer	433	88	81	79	89	96
Apple laptop computer	793	118	115	165	134	261
Windows desktop computer	451	5	21	15	322	88
Windows laptop computer	77	4	1	3	47	22
Printer	105	12	11	15	42	25
Digital projector	152	12	10	16	61	53
Digital camera	59	11	15	10	6	17
Video or digital video camera	32	3	3	3	20	3
Document camera	63	4	4	7	29	19
Scanner	37	4	3	4	19	7
Digital whiteboard	25	3	3	3	7	9
Digital whiteboard slate	15				12	3
Student response system	2	1	1			
DVD and/or VCR and/or CD player	125	17	18	19	38	33
Television	83	7	7	7	19	43
Overhead projector	139	14	16	14	43	52
MP3 player	22	3	6	3	8	2
Handheld computer	16				13	3
Wireless access points	101					
Network switches	42					
Servers	9					

Date: Spring 2008/2009