

District Technology Plan
For Bozeman School District 7
For the Years 2010 to 2013

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Information Technology Plan For Bozeman School District 7 2010-2013

Introduction

Bozeman School District #7 is located in Southwestern Montana, close to Yellowstone National Park. Montana State University is located in our community. Our economy is based on agriculture, tourism and small business. We have one high school (9-12), an alternative high school program, two middle schools (6-8) and seven elementary schools (K-5). A new Chief Joseph Middle School opened in September, 2008, Hyalite Elementary School opened in September, 2009, and the high school renovation will be completed in the summer of 2010.

Mission Statement

Core Purpose of the Bozeman Public School District:

Bozeman Public Schools exist to provide an outstanding education that inspires and ensures high achievement so every student can succeed and make a difference in a rapidly changing world community.

Core Values of the Bozeman Public School District:

- * High Student Achievement: We are committed to ensuring that all students achieve at high levels.
- * Committed, Quality Staff: We employ and retain well-qualified and talented staff members who demonstrate a commitment to the core purpose of the District.
- * Community and Family Engagement: We believe that parents and the community are essential contributors in the achievement of our goals.
- * Climate: We operate in a climate of respect, honesty and hard work, recognizing the need to be adaptable and open to change.
- * Fiscal Responsibility: We are fiscally responsible in the management and expenditure of all District resources.
- * Decision Making: We rely on best practices research to guide our decision-making.

Big Audacious Goal:

The Bozeman Public School District is widely recognized as a vibrant, flexible and progressive educational system that generates student excellence and prepares students to succeed and positively contribute in a global community.

A Vivid Description of the Desired Future:

Students

- * First and foremost, Bozeman Public Schools are about children.
- * Personalized education is embedded in everything that Bozeman Public Schools do.
- * Students are accepting, understanding of others, flexible and resilient, exposed to, and interested in, interacting with the global community.
- * Students have the opportunity to participate in a wide variety of quality extra-curricular activities that enhance their ability to succeed in school and as part of a world community.
- * Every student graduates and has met or exceeded the high academic standards of the Bozeman Public School District such that all students are equipped to succeed in post-secondary education.

Teachers

- * Teachers in the District are energized, well paid and inspire students to reach their maximum potential.
- * Teachers participate in a progressive professional development program to assure competency of staff.
- * Student achievement and results driven instruction are at the core of all professional discussions.

District

- * The District maintains a clearly articulated educational system that defines achievement on the attainment of goals. Bozeman Public Schools is equally effective at preparing students for post-secondary education and career readiness.
- * The District employs an effective management structure demonstrating behaviors that consistently produce effective staff leadership.
- * Resources and delivery systems (e.g., the school schedule/calendar, facilities, technology, pedagogy, materials, curriculum, etc.) are regularly assessed, aligned and optimally correlated to ensure achievement of the strategic plan of the District and to maximize the learning opportunities of children enrolled in Bozeman Public Schools.
- * The Board and Staff Leadership Team work collaboratively with the community to create a common vision with flexibility and ability to respond to a changing environment. The Board and Leadership Team are open, flexible, able/capable, consistent, and responsive.

Community

- * Together, Bozeman Public Schools, students and the community regularly collaborate as partners to achieve the shared goals of the District and community.
- * The District provides widely accessible, educationally responsive and community-centered facilities that regularly serve as locations where the community gathers and collaborates in the interests of children.
- * Bozeman Public Schools are widely recognized as being both community-centered and integrated into the world community. The schools of the District provide a link between the Bozeman community and the rest of the world.
- * Bozeman Public Schools are recognized locally and nationally as a significant contributor to Bozeman's outstanding quality of life.

Summary

Bozeman School District #7 established a Technology Steering Committee in the 1999-2000 school year. The committee is on-going to ensure that evaluation and review of the district technology plan will take place on a regular basis.

At all times, equality for all students will be a focus. Evaluation, assessment and accountability will be built into the technology plan to ensure that the plan will evolve to face changing needs and new developments in technology.

Technology Plan Goals and Objectives

NOTE: The Bozeman Public Schools' student technology profile and curriculum area standards have been set at all grade levels. These include grade specific benchmarks and skills. Areas addressed involve basic computer understanding, keyboarding, word processing, spreadsheet, database, Internet and multimedia. Our goals for students are to prepare them to be able to use technology as a tool to access information; analyze and solve problems; and communicate ideas. Our long-term technology goal states that all students, by the completion of grade 8, will be proficient in technology. The State of Montana Office of Public Instruction has technology proficiencies which will be measured by Simple Assessment.

Professional Development/Curriculum Goals:

1. Technology literacy for students and staff.
2. Use technology to support and develop curriculum and support student achievement.
3. Develop lesson plans to incorporate technology.
4. Use technology to benefit special needs students.
5. Embed instructional technology in Core Curriculum.

Telecommunication Services Goals:

5. Provide hardware, software and an integrated district level infrastructure in order to operate efficiently and in a cost effective and equal manner.

Budget Goals:

6. Identify current financial capacity.
7. Identify alternative funding sources.

Accountability Goals:

8. To establish a plan to continuously monitor, update and evaluate the use of technology in Bozeman School District #7.

A. Develop technology literacy for students and staff

The Bozeman Public School District is committed to improving technology literacy for staff and students. The following objectives will be evaluated and refined on a yearly basis:

- ∞ Review student profile and proficiencies by grade level.
- ∞ Create lesson plans for teachers to use to assist with the integration of technology.
- ∞ Utilize state and federal guidelines, develop, implement and monitor district policies and procedures related to technology.
- ∞ Review teacher profiles and proficiencies.
- ∞ Continue to implement technology assessments for grades 5 to 8.
- ∞ Achieve teacher proficiency in technology. In March, 2010, district staff participated in a technology assessment pilot entitled Simple Assessment. The results of this assessment show that based on a proficiency level of 80% of correct responses, 77% of our teaching

staff are proficient. Disaggregated by grade band, 76% at the elementary level, 76% at the middle level, and 80% at the high school level are considered proficient. By Spring 2012, 100% of district teachers will know, understand, and be able to teach the content knowledge required by Montana Technology Content and Performance, as measured by Simple Assessment.

- ∞ Develop curriculum to correlate with student profiles and proficiencies in the curriculum area currently being reviewed.

Evaluate and revise each curricular area on a rotating schedule; incorporate technology strands into each content area. Incorporate state standards and corresponding proficiency levels into curricula.

- ∞ Provide training program for staff during Flex days, PIR days, early release days and other training throughout the school year.
 - Include specific levels of mastering technology.
 - Create stepping stones of training to obtain specific levels of mastery.
 - Training will correspond directly to student learning objectives which integrate technology into the curriculum.

Current Staff Training Priorities:

- ∞ The key to a successful technology implementation plan is well-trained staff members who understand how to use the technology tools available to them and how that technology relates to the learning environment they have created in their classrooms. Teachers will be given the opportunity to learn a core set of basic technology competencies. As these skills are mastered, opportunities will be provided for teachers to understand how to fully integrate these technologies into the daily teaching/learning process in their classrooms.
- ∞ For each identified basic competency level, we have identified skills, which when all have been mastered, will bring a person to an intermediate - advanced user level. Staff members may gain competency through on-line tutorials, with the assistance of school-specific technology mentors, instructional coaches, technology Professional Learning Communities, technology infused in to all professional development offerings, and through school site and district-wide workshops.
- ∞ The Professional Development Committee, in conjunction with the Technology Steering Committee, will determine technology training opportunities. This committee meets regularly and represents all schools and subject areas. The staff development plan is submitted to the school board each year for approval. For PIR Days and Early Release Days: Three levels of training are provided: district, school and individual. The district level trainings are offered during PIR days and half day early releases. School training is offered during half day early releases and staff meeting times. Individual training is done through the Technology Services Department and on-line courses. Technology mentors and instructional coaches are assigned to assist in solving problems and identifying and learning new technologies.
- ∞ Instructional Coaches, K-12, will support teachers with use of instructional technology, in professional development opportunities embedded in the work day.
- ∞ Automate everyday tasks to encourage daily use of technology. Areas already accomplished are:
 - Daily bulletins distributed electronically

- Automated circulation systems in school libraries and District Media Collection.
- On-line catalogs and databases. (Central Stores, Technology Request for Assistance, Staff Directory, Ordering Information, Software and Hardware Inventory and Procedures Database.).
- On-line budget information for schools/departments.
- On-line attendance and grading in K-12 schools.
- Automated substitute teacher dispatch system.
- Data Warehouse system for student performance analysis by teachers and administrators.
- The use of Moodle for various district committees and several classes at the Middle and High Schools.
- Automated system for professional development registration and tracking.
- Template system to allow simple web page development for staff and departments (TeacherLink).
- Online instructions for completion of district reports.
- E-Grant submittals.
- MT Edition for Special Education IEP reporting.
- Software for identifying at risk and “invisible” students.
- Google Apps for Email, Scheduling and collaborative documents
- Safari Montage streaming video collection

B. Use technology to support and develop curriculum

As mentioned in the previous section, a schedule is in place to assess and modify curriculum by subject area. Every year at least one curriculum area is reviewed and modified as needed. A technology strand was incorporated into the curriculum rubric. Each Curriculum Leadership Team must provide information on software packages and techniques to use when integrating technology into the curriculum as part of the technology strand.. During the 2009-10 school year, the Social Studies Curriculum Leadership Team adopted standards and is investigating instructional materials adoptions. The Social Studies CLT is seriously exploring ways to use electronic media.

Technology applications are discussed as part of every curriculum adoption. Professional development time is devoted, in part, to technology, and teachers and students are provided access to computers and other hardware during the school day.

The High School is exploring the feasibility of use of online instructional materials. A Mandarin Chinese language class was offered in 2009-2010 through the University of Montana. In 2010-11, Mandarin Chinese will be offered through the Montana Digital Academy.

Each year, more teachers use Moodle to develop on-line learning opportunities for their students. In fall, 2009, the Board of Trustees approved a revision to the Cell Phone and Electronic Device policy, which expanded the use of cell phones in the high school and provided opportunities for students to use personal electronic devices to support their learning. This revision came after months of discussion in a group that included high school students, parents, teachers, community members and administrators.

Google Apps was introduced in December, 2010. It offers the use of collaborative documents and scheduling for all staff. We also piloted My Access for the Office of Public Instruction. It is a writing assessment program.

The district employs a district web page for curriculum, which may be accessed at

<http://www.bsd7.org/curriculum>.

C. Use technology to benefit special needs students

We are committed to ensuring that students receive the best education they are capable of receiving. We define students with special needs as ranging from the severely disabled to the gifted student.

Training in the use of assistive technology started in August of 2001 and has continued every year. Co-Writer™ and Cast E-Reader™ had been purchased for every resource classroom in the district in 2001. In September 2006, the Read 180 reading program was introduced in grades 9-12. The Lexia program was also introduced in the K-8 schools for improving reading skills. The OPI MT Edition for Special Education is used to track student IEP information. Everyday Math Games was introduced in 2008 in K-5 classrooms to assist with Math skills.

The district continues to explore the use of instructional software to meet the needs of all students, under a Response to Intervention model. Such software would be accessible to all students, and serve as a supplemental intervention to the general curriculum. It is anticipated that hardware upgrades would be needed with the adoption of this software.

The District piloted Compass Learning in one elementary school as part of the Rtl model. It was implemented in the two middle schools and one elementary school in the fall of 2010.

The PEAKS (gifted and talented) program is improving its technology software and hardware to include newer computers and software.

D. Provide hardware, software and an integrated district level infrastructure in order to operate efficiently and in a cost effective and equal manner

Assessment of Telecommunication, Hardware and Software

Bozeman School District #7 has been taking steps to provide all students with the same basic equipment in each school and classroom. Each school has an equal infrastructure. It is the responsibility of the school principal to notify the Technology Supervisor at the yearly assessment meeting of any classroom deficiencies in the following list. The following are items that have been accomplished to date:

- The school district has a central content filtering system to block inappropriate content.
- The school district has e-mail and web-based e-mail available to all staff, including spam filtering and attachment filtering.
- Each school has at least a 100 Mbs fiber link, which provides both telephone and data.
- Each school has its own local network, which is connected to the district wide area network.
- Each classroom has at least one computer and one Internet connection.
- Each classroom has a television, DVD/VCR and a cable TV connection.
- Each classroom has a telephone, and every teacher has a voice mail box.

- Teachers can build their own classroom web page through an easy-to-use template.
- At least one computer in classrooms and all computers in labs are connected to the internet.
- Every school has a working intercom system.
- Every school library has access to the central electronic circulation system with student work stations.
- Every school has at least two portable wireless computer labs.
- Every school has several laptops with projectors and document cameras for presentations.
- Every classroom and lab computer has a license for Microsoft Office with PowerPoint.
- A Zone Integration System automatically updates the Library Circulation system and Food Service system when new students are entered into the Student Records utilizing the Schools Interoperability Framework.
- Every school has wireless network access.

Current Priorities:

- ∞ Standardize software. Each classroom teacher must have the same basic software needed to teach, assess and report on the curriculum for that grade/subject level. The Technology Supervisor, the Assistant Superintendent of Curriculum and Instruction, and Curriculum Director will meet in the Fall of each year to revise and assess their recommendations. Curriculum support materials are decided by the curriculum area committees. Special Services will provide their own software requirements.
- ∞ Identify software and hardware to assist with Response to Intervention for at risk students.
- ∞ Specify a timeline for updating software and hardware. The Technology Department will stay informed of new versions of software and hardware and make recommendations for purchases.
- ∞ Identify facility needs and plan for addressing them. By district policy, a Facility Master Plan must be developed to cover a 10 year period, with annual reviews. Amongst other items, such as boilers, etc., a plan was approved by the trustees for upgrading and replacing electrical services in the older buildings. Since the beginning of the 2004-2005 school year, three older schools have had electrical services replaced. One Middle school has been replaced and a major renovation of Bozeman High School will provide new electrical services in over half of the classrooms. An additional elementary school will have an electrical update completed in 2011.
- ∞ Update network equipment in every school. In 2009 all switches and routers were replaced in all schools. Wireless access points were installed in all schools in 2009.

- ∞ Have checkout equipment available for inservices and classroom use. At this time there are several projectors with laptops, visual presenters, digital cameras, digital and VHS video recorders available from the Media Services Department for short-term loans. Each year the checkout history is evaluated to ensure that enough equipment is available to provide coverage for peak times. All 6-12 classrooms have lcd projectors in classrooms. K-5 classrooms have access to multi-media carts that include visual presenters and lcd projectors.
- ∞ Replace aging computers on a regular basis. Each year, aging computers will be replaced, with a minimum system configuration determined each Spring by the Technology Services Department.
- ∞ A wide area network study was completed in 2007. A fiber optic based Wide Area Network was installed in the summer of 2008 PRI voice circuits were installed to replace outdated DSS circuits in the summer of 2009. Additional bandwidth for Internet access was installed in the summer of 2009 and 2011
- ∞ The outdated telephone system was replaced with a Voice Over IP system in the summer of 2009.

E. Identify current financial capacity

Technology purchases are determined by the assessment of computer hardware and equal distribution of equipment. Determination is made by the school principal and the Technology Services Supervisor, with input from staff.

- District budget for repair of classroom computers and related hardware. This has been sufficient to repair equipment, or to purchase replacements if repair is not possible.
- A Technology Mill Levy was passed in May of 2002. It provides funding for current and future technology purchases and some training.
- Building reserve fund. This fund is used to provide adequate electrical services for each school. In some instances, new circuits have been run to classrooms when computer labs were updated. Several buildings are scheduled to have major electrical overhauls. This fund is also used for cabling projects for telephone and data.
- State technology money from timber sales. This funding has not been consistent. The funds are used to assist with hardware and software acquisitions.
- E-Rate (Schools and Libraries Universal Service Fund) is utilized to provide a discount for approximately fifty percent of the telephone and data line expenses.
- Although significantly decreased in the past few years, Title II Part D funding has been used to implement a technology mentor teacher program in each school. Teachers are trained to help other teachers with technology in the classrooms.
- Carl Perkins funding has been used to purchase hardware and software for vocational classes, including adult education classes.
- Grants and other funding opportunities, as they become available

F. Identify alternative funding sources

To properly integrate technology into the curriculum, research and effort must be given to identify alternative funding sources.

- ∞ The Curriculum Director is also the grants coordinator, and is charged with writing and coordinating federal grants for technology and other purposes.
- ∞ A private foundation has been created to solicit funds from community members. Teachers may apply for additional funding related to technology.

G. To establish a plan to continuously monitor, update and evaluate technology usage.

The following are the criteria for the district technology plan assessment:

- Staff assessment:
 - Evaluations and observations by supervisors
 - On-line surveys: Simple Assessment every other year
 - Professional Development Surveys
- Student assessment
 - Evaluation by teachers and staff
 - On-line surveys: Simple Assessment every year to assess 8th grade technology proficiency)
 - District technology assessments for 5th to 8th grades
- Curriculum Assessment
 - Curriculum Leadership Teams meet regularly to assess curricular areas
 - Update software recommendations for integration
 - Refine and amend for best use
 - Includes technology person on each Curriculum Leadership Team
- General Technology Review
 - Performed each March by Administrators and Technology Services Supervisor
 - On-going evaluation necessitated by changing technology
 - Life expectancy, replacement
 - Software revisions, upgrades
 - Equality to all schools
- Technology Plan Review
 - Formally reviewed once a year in the Spring by the District Technology Steering Committee using data from the March general technology review
 - Modify to include current technology and refine best use recommendations

Development Plan Strategies

- ∞ Strategy 1: Convene a K8 technology curriculum committee to create grade level expectations related to the student technology profiles. These grade level expectations will be readily applicable to content area curricula into which the technology learning objectives will be integrated. Outcomes will include training in digital scanners, digital cameras, data management tools and educational software. Develop comprehensive

assessment tools to measure skill levels for students. (Goals A, C, D, E, H) This strategy is completed. It is now an ongoing process with regular reviews and updates.

- ∞ Strategy 2: Convene a K12 technology professional development committee, which will meet to determine how teacher knowledge will be assessed as well as topics and avenues for staff professional growth in technology. Develop comprehensive assessment tools to measure skill levels for staff. (Goals B, E, H) This strategy is completed. It is now an ongoing process with regular updates and revisions.
- ∞ Strategy 3: Utilize technology mentors to be K12 technology leaders and trainers. Technology Mentor teachers are technology leaders for their assigned school. They model technology integration in their own classroom and assist classroom teachers with learning the use of technology in administrative and classroom applications. (Goals A, B, C, D, E, H) This is an ongoing strategy.
- ∞ Strategy 4: Update computer hardware and software. Develop a schedule to update computers on a regular basis to ensure keeping technology current. (Goals E, F, G, H) This is an ongoing strategy.
- ∞ Strategy 5: Upgrade infrastructure to ensure network stability. Develop a schedule to update network and telephone equipment. (Goals E, F, G, H) This is an ongoing strategy.
- ∞ Strategy 6: Evaluate and purchase administrative data gathering, statistical, analysis, reporting, and staff management tools. This will include data warehouse, assessment and personnel management software. (Goals A, B, C, D, E, F, G, H) This is an ongoing strategy.
- ∞ Strategy 7: Work closely with Bozeman School District Foundation for funding needs. (Goal F, G) This is an ongoing strategy.
- ∞ Strategy 8: Incorporate Instructional Coaches in grades K-12 to model integrated and differential learning models.

Implementation Timeline

2009-2010

- Strategies 1-7:
 - Professional Development and Technology committees will continue to evaluate class offerings and fine tune course offerings for staff.
 - Work with Montana State University to offer technology in-service with credit options.
 - Obtain Dashboard information for creating and displaying district statistics
 - Provide training to Mentor Teachers in current curriculum implementations.
 - Continue to purchase projection devices for schools.
 - Identify software to implement RTI for K-5 students
 - Complete network for new BHS.
 - Continue to evaluate and replace older hardware.
 - Continue to update district web page.
 - Continue to use Mentor Teachers and Instructional Coaches to model technology integration.

- Utilize Instructional Coaches to model technology integration in K-5 schools
- Continue M7 strategies and content for staff development.
- Pilot Simple Assessment for staff and 8th grade technology proficiency.
- Implement district technology assessments.
- Assess teacher proficiency through Simple Assessment.
- Implement new Science Curriculum.
- Install wireless access points in all schools
- Install VOIP telephone system at all schools and administration offices.
- Expand the use of Moodle in classrooms and for staff development.
- Place Everyday Math into pilot classrooms for Math Rtl.
- Pilot Compass Learning's Odyssey in one elementary and one middle school for Math Rtl
- Allow personal electronic devices in grades 9-12 with teacher supervision
- Install Vision Net for the ability to communicate with tribal schools for Indian Ed for All

2010-2011

- Strategies 1-7
 - Professional Development and Technology committees will continue to evaluate class offerings and fine tune course offerings for staff.
 - Continue to work with Montana State University to offer technology in-service with credit options
 - Continue to provide training to Mentor Teachers in current curriculum implementations
 - Continue to purchase projection devices and visual presenters for K-5 schools
 - Implement RTI for K-5 schools
 - Continue to evaluate and replace older hardware.
 - Continue to update district web page.
 - Continue to use Mentor Teachers to model technology integration
 - Continue to use Instructional Coaches to model technology integration in K-5 schools
 - Continue to evaluate and replace older hardware
 - Continue with Simple Assessment to assess eighth grade technology proficiency
 - Continue district technology assessments
 - Implement Google Apps for staff email, calendaring, and collaborative document sharing.
 - Every teacher will become a member of a Professional Learning Committee
 - Implement Compass Learning Odyssey in Middle Schools and one elementary school
 - Add additional wireless access points in schools where necessary
 - Expand use of Moodle in Classrooms
 - Implement Social Studies Curriculum
 - Use EasyCBM assessment system for K-8 Math assessments
 - Implement Safari Montage for classroom video streaming

2011-2012

- Professional Development and Technology committees will continue to evaluate class offerings and find tune course offerings for staff
- Continue to work with Montana State University to offer technology in-service with credit options

- Continue to provide training to Mentor Teachers in current curriculum implementations
- Complete purchase of projection devices and visual presenters for K-5 schools
- Continue to evaluate and_replace older hardware
- Continue to implement Rrl in schools
- Expand use of Moodle in Classrooms
- Continue to use Simple Assessment to assess certified staff and eighth grade technology proficiency
- Continue district technology assessments
- Complete wireless access for classrooms
- Expand Google Apps for classroom use
- Implement EasyCBM in High School.
- Implement Library Media and Health Enhancement Curriculum
- Continue to update district web page
- Add Reading assessments to EasyCBM
- Implement Inform Performance Management System
- Implement Prevent At Risk identification software
- Utilize Neo2 carts in K-5 schools for keyboarding and writing skills.
- Use Instructional Coaches, K-12, to assist teachers with technology integration in a job-embedded professional development model.

2012-2013

- Professional Development and Technology committees will continue to evaluate class offerings and find tune course offerings for staff
- Continue to work with Montana State University to offer technology in-service with credit options
- Continue to provide training to Mentor Teachers in current curriculum implementations
- Continue to evaluate and_replace older hardware
- Continue to implement Rrl in schools
- Continue to update district web page
- Continue to use Simple Assessment to assess eighth grade technology proficiency
- Continue district technology assessments
- Continue to evaluate and upgrade Rtl programs

Hardware and Software Purchase Plan through 2010-2013

2009-2010 School Year:

District:

Purchase new telephones for all schools.

Purchase new district servers and backup devices for FileMaker Pro and 2nd Moodle server.

Purchase and implement new transportation and boundary software.

K-5 Schools:

Replace oldest teacher and library computers.

Replace oldest iBook labs.
Install Wireless Access Points in remaining schools.
Visual Projectors and LCD projectors for each school.
Open new Hyalite Elementary school, purchase necessary equipment.

Middle Schools:

Replace oldest classroom computers.
Install LCD projectors in ceilings as many classrooms as possible. (SMS)
Install Wireless Access Points in remaining Schools.
Replace oldest iBook lab in each school.
Update operating systems for teacher computers.
Implement new teacher gradebook software.

High Schools:

Add technology equipment as needed for second phase remodeling/building phase of BHS.
Replace oldest teacher computers.
Install projectors in ceilings of remaining classrooms.
Replace up to 10 BAS library computers.
Additional memory and update OS for teacher computers.
Purchase equipment and software for new Bio-Med course.
Implement new teacher gradebook software.

2010-11 School Year:

District

Purchase replacement servers for oldest models.
Obtain Performance Management software, Inform.
Replace oldest administrative office computers.
Update network infrastructure – new Firewall appliance and some switches.
Evaluate filtering and packet shaping appliances for possible purchase.
Add third Moodle Server for grades K-8.
Obtain at risk identification software, Prevent
Obtain Math assessment software, EasyCBM.

K-5 Schools:

Purchase RTI software.
Replace oldest teacher and library computers.
Replace oldest iBook labs.
Purchase Visual Presenters and LCD projectors.
Add access points to wireless network as needed.

Middle Schools:

Replace oldest classroom computers.
Install LCD projectors on ceiling of SMS classrooms.
Replace eMac lab at SMS.
Add access points to wireless network access.
Final purchase and installation of projectors for SMS.
Purchase visual presenters for middle schools.

High School:

Add technology equipment as needed for final phase of BHS remodel.
Replace 2 portable labs at BHS.
Replace oldest teacher computers.
Replace G6 lab.
Replace Photo Lab.
Add new computer lab in room 120.

Re-cable and add wireless in C wing for Bridger Program.

2011-12 School Year:

District

Replace oldest administrative office computers.

Replace oldest servers.

K-5 Schools:

Replace oldest teacher and library computers.

Replace oldest iBook labs.

Purchase Visual Presenters and LCD projectors.

Place computer pods in selected classrooms.

Purchase Neo2 labs for keyboarding and writing skills.

Middle Schools:

Purchase RTI software.

Replace CJ eMac lab.

Purchase visual presenters for middle schools.

Replace oldest teacher computers.

High School:

Replace oldest teacher computers.

Replace B6 lab.

Place computer pods in selected classrooms.

Place visual presenters in selected classrooms.

Purchase new Moodle server.

2012-13 School Year:

District:

Replace oldest administrative office computers.

Replace oldest servers.

K-5 Schools:

Replace oldest teacher and library computers.

Replace oldest iBook labs.

Continue to purchase visual presenters and LCD projectors.

Install Rtl software as needed.

Place computer pods in selected classrooms.

Middle Schools:

Replace oldest teacher and library computers.

Purchase additional computers for computer labs.

High School:

Replace oldest teacher computers.

Replace oldest MacBook lab.

Place visual presenters in selected classrooms.

Budget

09-10 SCHOOL YEAR

Telecommunication Services	\$110,610	E-Rate, District Technology Budget
Internet Service Provider	\$10,753	E-Rate, District Technology Budget
Internet Filtering	\$3,600	District Technology Budget
Hardware, New and Replacement	\$490,465	District Tech Levy, School Budgets, PAC's, Carl Perkins, State Timber Fund, Stimulus Funds, Construction Funds, Title Funds
Hardware Maintenance	\$35,000	District Technology Budget, Carl Perkins
Contracts		
Software	\$130,459	School/Department Budgets, District Tech Levy, Carl Perkins
Software Maintenance	\$110,000	District Technology Budget, Transportation Budget
Contracts		
Professional Development	\$5,000	District Professional Development Budget, State Timber Fund
Professional Conferences	\$0	Curriculum, Technology Budgets
Mentor Teachers	\$12,038	District Tech Levy, State Timber Fund
Instructional Coaches	\$100,000	Private Donation
Total	\$1,007,919	

10-11 SCHOOL YEAR

Telecommunication Services	\$110,800	E-rate, District Technology Budget
Internet Service Provider	\$10,753	E-rate, District Technology Budget
Internet Filtering	\$3,600	District Technology Budget
Hardware, New and Replacement	\$400,000	District Tech Levy, School Budgets, PAC's, Carl Perkins, State Timber Fund, Stimulus Funds, Construction Funds, Title Funds
Hardware Maintenance	\$35,000	District Technology Budget, Carl Perkins
Contracts		
Software	\$75,000	School/Department Budgets, District Tech Levy, Carl Perkins
Software Maintenance	\$110,000	District Technology Budget, Transportation Budget
Contracts		
Professional Development	\$5,000	District Professional Development Budget
Professional Conferences	\$0	
Mentor Teachers	\$12,038	District Technology Budget
Instructional Coaches	\$100,000	Private Donation
Total	\$762,191	

11-12 SCHOOL YEAR

Telecommunication Services	\$110,800	E-Rate, District Technology Budget
Internet Service Provider	\$10,753	E-Rate, District Technology Budget
Internet Filtering	\$3,600	District Technology Budget
Hardware, New and Replacement	\$400,000	District Tech Levy, School Budgets, PAC's, Carl Perkins, State Timber Fund
Hardware Maintenance	\$35,000	District Technology Budget, Carl Perkins
Contracts		
Software	\$75,000	School/Department Budgets, District Tech Levy, Carl Perkins
Software Maintenance	\$110,000	District Technology Budget, Transportation Budget
Contracts		
Professional Development	\$10,000	District Professional Development Budget, District Technology Budget, Title Funds
Professional Conferences	\$3,000	District Professional Development Budget
Total	\$658,153	

12-13 SCHOOL YEAR

Telecommunication Services	\$110,800	E-Rate, District Technology Budget
Internet Service Provider	\$10,753	E-Rate, District Technology Budget
Internet Filtering	\$3,600	District Technology Budget
Hardware, New and Replacement	\$400,000	District Tech Levy, School Budgets, PAC's Carl Perkins Timber Fund
Hardware Maintenance Contracts	\$35,000	District Technology Budget, Carl Perkins
Software	\$75,000	School/Department Budgets, District Tech Levy, Carl Perkins
Software Maintenance Contracts	\$110,000	District Technology Budget, Transportation Budget
Professional Development	\$10,000	District Professional Development Budget, Title Funds, District Technology Budget
Total	\$656153	

Evaluation

Technology Standards:

- ∞ The Board of Trustees adopted technology standards for Bozeman Public School teachers and administrators. These standards were based on ISTE student technology profiles, with permission from ISTE to use their copyrighted profiles.

Staff Assessment:

- ∞ Staff assessment of technology skills has been based on a self-assessment instrument developed by the Gates Foundation called TAGLIT. TAGLIT has been administered in the Bozeman Public Schools since 2001. In 2010, Simple Assessment was adopted by OPI and will be used for staff assessment every two years.
- ∞ The use of educational technology will be a component of the formal teacher evaluation process.
- ∞ Teachers will discuss technology competency goals with their principal as part of the evaluation process.

Student Assessment:

- ∞ The Board of Trustees adopted technology standards for Bozeman Public School students. These standards are based on ISTE student technology profiles, with permission from ISTE to use their copyrighted profiles.
- ∞ Since 2001, sample groups of students have been administered the TAGLIT self-assessment tool concurrently with the teachers to provide preliminary student assessment information for the district. In 2010, Simple Assessment was adopted by OPI and will be used to assess every 8th grade student each year.
- ∞ Grade level technology expectations are in place and in use. These grade level expectations and associated assessments are integrated into content area curricula as part of the Bozeman Public School's Curriculum improvement Sequence.
- ∞ District student assessments were developed during the 2006-07 school year and are being implemented All 6th graders, at the end of their Info Skills coursework, are assessed for 8th grade proficiency. If they have not obtained proficiency they will take a 7th grade technology class. All incoming 9th grade students complete a technology assessment; if they are not proficient they must take a tech course prior to graduation.

Technology Review:

- ∞ Bozeman Public Schools maintains an inventory database of hardware and software. This inventory is reviewed on an annual basis to evaluate replacement of equipment to correspond with the technology plan goals. The technology department will perform this review and will work with building principals and staff to ensure adequate equipment for their technology needs.
- ∞ Equitable Access: As part of the continual monitoring and review process, a concerted effort will be made to strive for technological equity among schools. Procurement of software and hardware is based on identifying and replacing out of date equipment, the anticipation of proven, researched based technological advances, and recommendations for materials acquisitions related to the Curriculum Improvement Sequence.

Technology Plan Review:

- ∞ Review of the Bozeman Technology Plan will occur on an annual basis by the following groups. All groups will evaluate the technology to support and comply with the technology component of the district five-year plan.
- ∞ Mentor teachers/principals – These staff members evaluate how the Technology Plan is meeting the needs of their school.
- ∞ Professional Development Committee: This committee guides decisions related to staff development
- ∞ Current Curriculum Leadership Teams---These committees monitor the effective integration of technology into specific curriculum areas. They review student technology assessment information to promote research based instructional methods.
- ∞ Technology Supervisor/Assistant Superintendent of Curriculum & Instruction -- These staff members analyze data, comments and recommendations and revise the Technology Plan as appropriate.
- ∞ Board of Trustees –The Board reviews the Technology Plan on a yearly basis.

Community Education

Technology supports the district's Adult Basic Literacy Education (ABLE) program as well as the Community Education program. Computer labs, software, and a variety of technology resources (projection systems, printers, scanners, instructional and application software, etc.) are used by K-12 and ABLE during the day and by Community Ed in the evenings for in-services and workshops. Professional development activities are "shared" among the ABLE, Community Ed and Bozeman High School vocational programs.

Innovative Instructional Delivery Strategies

Some examples of teaching, learning, and administrative uses that are occurring in our district:

Individual Student Use

Students utilize word processing, graphics, and multimedia for student projects. Students use www and other on-line tools for research purposes. Students access library circulation information from any computer in the district or from home. Students can view their current grades, comments, attendance and schedules from any computer with Internet access. Students use Moodle as part of their class work. Google Apps is also available for student collaboration.

Teacher Use

Teachers use email to communicate with administrators, parents and each other. Teachers use district web resources to access online databases and forms. Teachers create web pages and classroom-related activities and lessons that support curriculum. Teachers use Moodle to hold online discussions and Google Apps for collaboration as part of their work in various District committees.

Project Based Learning

Students and teachers pursue authentic inquiries supported by technology for research data analysis and publication.

Dedicated Curriculum

A+ Certification courses are offered at Bozeman High School. These courses help prepare students for technology careers and more advanced usage of technology.

District and Community

The Bozeman Public Schools' website offers a variety of information regarding schools, staff, school board policies and district activities. This extensive resource offers detailed information on technology and curriculum meeting minutes, the enrollment process, curriculum resources, and many other features.

District Databases

Student records software provides administrators, teachers, parents and students with extensive information. This system allows the viewing of grades, comments, attendance, and schedules in real-time.

Online Safety

A filtering system helps to protect students from inappropriate materials online. It will not filter all inappropriate sites, but is used in combination with teacher supervision. Teachers evaluate online resources to create more effective guided instruction for the classroom. Board policy governs the usage of key elements of technology in the district.

Parent Involvement and Communication

The district has invested in Power School, a student records software package. Students and parents can access PowerSchool and view current grades, assignment scores, and attendance for the classes in which they are currently enrolled. Attendance information is updated on a daily basis. Assignments and current grades are updated as teachers enter the information into their electronic grade books.

Some school newsletters are sent to parents via e-mail and are also available through the PowerSchool parent and student access. The District's long-range teacher plan is prominently displayed on the District's web page. The Superintendent's "Friday Letter" is distributed to community members via e-mail. The Board of Education meeting agendas are available online, as are all district policies and administrative procedures. Finally, community members are routinely included in major committees.

Relevant Research

Curriculum and Teaching Strategies:

Bailey, Gerald D. "What Technology Leaders Need to Know: the Essential Top 10 Concepts for Technology Integration in the 21st Century." *Learning and Leading with Technology* 25.1 (1997) : 57-62.

Clark, Sharon E. and Jon J. Denton. "Integrating Technology in the School Environment: through the Principal's Lens." (1998): 14p. ERIC ED417696

Stevenson, Heide J. (2004). Teachers' Informal Collaboration Regarding Technology, *Journal of Research on Technology Education*, Volume 37 Number 2

The Effects of Distance Education on K-12 Student Outcomes: A Meta-Analysis. Available online: <http://www.ncrel.org/tech/distance/k12distance.pdf> (PDF File)

Keeping Pace With K–12 Online Learning: A Review of State-Level Policy and Practice. Available online: <http://www.ncrel.org/tech/pace2/>

Youth Internet Safety Research. Available online: http://www.unh.edu/ccrc/youth_internet_safety_survey_publications.html

CEO Forum on Education and Technology. (1999, February). School technology and readiness report: Professional development: A link to better learning. Washington, DC: Author. Available online: <http://www.ceoforum.org/downloads/99report.pdf>

Student Academic Achievement:

Cradler, J. (1994). Summary of current research and evaluation findings on technology in education [Online]. Available: <http://www.wested.org/techpolicy/refind.html>

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Eisenberg, M.B., & Johnson, D. (1996). Computer skills for information problem-solving: Learning and teaching technology in context. ERIC Digest [Online]. Available: <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED392463>

Honey, M., Culp, K.M., & Carrigg, F. (1999). Perspectives on technology and education research: Lessons from the past and present [Online]. Available: <http://www.ed.gov/rschstat/eval/tech/techconf99/whitepapers/paper1.html>

Wenglinsky, H. (1998). Does it compute? The relationship between educational technology and student achievement in mathematics [Online]. Available: <ftp://ftp.ets.org/pub/res/technolog.pdf>

Critical Issues: Technology in Education. Available online: <http://www.ncrel.org/sdrs/areas/te0cont.htm>

Effects of Using Instructional Technology in Elementary and Secondary Schools: What Controlled Evaluation Studies Say. Available online: <http://caret.iste.org/index.cfm?fuseaction=studySummary&studyid=1044>

The Learning Return on Our Educational Technology Investment: A Review of Findings from Research. Available online: http://www.wested.org/online_pubs/learning_return.pdf (PDF file)

What Impact Does the Use of Technology Have on Middle Level Education, Specifically Student Achievement? Available online: <http://www.nmsa.org/> (Click on “Research”, “Research Summaries”, and then “Technology in Middle Schools”)

Schacter, J. (1999). The impact of technology on student achievement: What the most current research has to say. Santa Monica, CA: Milken Family Foundation. Available online: <http://www.mff.org/publications/publications.taf?page=161>

CEO Forum on Education and Technology. (2001, June). School technology and readiness report: Available online: <http://www.ceoforum.org/downloads/report4.pdf>

Fulton, K. Yoon, I. & Lee, C. (2005, August). Induction into learning communities. National Commission on Teaching and America's Future. Available online: http://www.nctaf.org/documents/nctaf/NCTAF_Induction_Paper_2_005.pdf

Kagan, S. L., & Stewart, V. (2004). Putting the world into world-class education. Phi Delta Kappan, 86(3), 195-197.

Sherry, L. & Jesse, D. (2000, October). The impact of technology on student achievement. Denver, CO: RMC Research Corporation. Available online: http://carbon.cudenver.edu/~lsherry/pubs/tassp_00.htm

Wang, L. The advantages of using technology in second language education. Technology Horizons in Education Journal, May 2005 p.38-41.

November, Alan. Challenging Students to Learn. Available online: http://novemberlearning.com/index.php?option=com_content&task=view&id=44&Itemid=87 (PDF File)

November, Alan. "Banning Student Containers." Available online: http://novemberlearning.com/index.php?option=com_content&task=view&id=62&Itemid=87&2b97eba25b7833090943f99e5dff5a08=d7fc354e4472f5060c2e7a86b7498766&2b97eba25b7833090943f99e5dff5a08=7b30ae1e667c0f854ebf44908997cf0c&2b97eba25b7833090943f99e5dff5a08=2ba0c448ece2d13a14e9511ab8bbd11e&2b97eba25b7833090943f99e5dff5a08=8103dcd513d166eafd64a555114509fd (PDF File)

Bozeman School District 7 Technology Policies

The Board of Trustees has approved the following technology related policies:

2100 Curriculum Development:

http://www.bsd7.org/district_policies/index.php?dir=2000_Series/

2161 and 2161P Assistive Technology:

http://www.bsd7.org/district_policies/index.php?dir=2000_Series

2312P – Copyright

http://www.bsd7.org/district_policies/index.php?dir=2000_Series/

6124 – Superintendent Evaluation

http://www.bsd7.org/district_policies/index.php?dir=6000_Series/

8421 – Computer Software

http://www.bsd7.org/district_policies/index.php?dir=8000_Series/

8422 – District Provided Access to Electronic Information, Services and Networks

http://www.bsd7.org/district_policies/index.php?dir=8000_Series/

8423 – District Internet Web Page Guidelines

http://www.bsd7.org/district_policies/index.php?dir=8000_Series/

Technology Integration Project

Standards-based instruction, best practices in instruction and effective use of our technology is identified in Bozeman's School District Long Range Strategic Plan* and outlined by Montana's Technology Standards. **

Therefore, the goals of this project will focus on the effective use of technology tools and technology integration in classroom instruction that is based on standards and best practices in instruction. The following steps outline the priorities of this project.

1. Identify Bozeman School District Content Standards and collect or create lessons that effectively integrate technology to accomplish content standards. Best practices of instruction, such as Understanding by Design, and technology integration will be a priority.

2. Create an online resource list for teachers and staff that shares knowledge on effective practices of technology integration, instruction and professional development. Categories on resource list will include Online Investigations/Projects, Lesson Ideas and Integration, Using Tools and Software, Internet Safety, Professional Development/Tutorials for Teachers and Students. These identified resources are related to Montana Technology Standards, Long Range Strategic Plan and Bozeman Content Standards.

3. Correlate Montana Technology Standards with Bozeman School District Technology Plan and embed Montana Technology Standards into our curriculum.

Attached is a copy of the resource list and lesson plans.

Bozeman School District Long Range Strategic Plan

Goal Area 1: Academic Performance:

Every student meets or exceeds the high academic standards of the Bozeman Public School District.

Intended Outcomes:

- ∞ All students show grade level academic performance in all content areas, with a consistent focus on reading, writing, math, and science proficiency.
- ∞ Integrated and differentiated approaches to instruction are used.
- ∞ Multiple measures are used to measure academic performance based on district-created progress goals.
- ∞ Standards-based curriculum development, instructional strategies, assessment, grading and reporting are implemented.
- ∞ By graduation, all students successfully complete a career cluster strand and are proficient in technology.
- ∞ By graduation, all students have extensive exposure to and the opportunity to become proficient in a language in addition to English.

Technology

Assumptions

- ∞ We will experience continued challenges in keeping abreast of technology improvements to ensure that we maximize the opportunities for use of technology by the children and staff in our District.
- ∞ We will experience a growing need for technology education in order to be competitive in a global environment.
- ∞ As our use of technology increases, we will need to plan for, monitor, and guide appropriate uses of technology in our School District.
- ∞ The growth and advancements in technology will present increasing quantity and quality of distance and other virtual learning opportunities.

Bozeman Curriculum Standards

<http://www.bsd7.org/curriculum/Curriculum.php?dir=1%20Curriculum/>

** Montana Technology Standards, Benchmarks and Performance Descriptors

<http://www.opi.state.mt.us/Accred/cstandards.html>

Montana Standards for Technology

Today's learners—teachers and students—are continually affected by a variety of digital technologies. These technologies have altered their expectations and skills. Traditional instruction alone no longer provides students with all the skills necessary to find personal value and professional success. Therefore, education needs to play an increasing role in empowering learners to be technologically literate and to integrate digital tools into their lives.

Expectations for student learning are increasing as digital tools make basic tasks easier. We must help students meet these expectations by understanding that:

- *digital technology must be in the hands of all students;*
- *technological literacy includes more than simple mastery of skills;*
- *digital citizens must use digital tools safely and responsibly;*
- *learning environments are no longer constrained by school walls; they are global and personal;*
- *digital technology skills are acquired, developed, and mastered at an individual pace;*
- *access to tools and flexible networks are critical for learner success.*

While digital technology tools can be used to facilitate assessment of student learning, the primary application of these tools must be used to support content area learning. Although integrated learning systems can be used to deliver curriculum, true technology integration involves dynamic interactions among learners using digital tools.

Inquiry-based learning activities, rich in relevant content and integrated with digital technology, can facilitate collaboration, critical thinking, creativity, and problem solving. Properly applied, technology enhances learning and instruction, but does not become the focus. By providing access to information and tools for expression, opening pathways to communication, and facilitating personal understanding, technology supports learning in all subjects.

Technology Content Standard 1

To satisfy the requirements of Technology Content Standard 1, a student must: use digital tools and resources for problem solving and decision making.

Rationale

As personal and global problems become more complex, digital tools are powerful vehicles for data collection and analysis, collaboration, and presentation of solutions. Therefore, all learners must select and use digital tools to make sound, accurate, data-supported decisions and presentations.

Technology Content Standard 2

To satisfy the requirements of Technology Content Standard 2, a student must: collaborate and communicate globally in a digital environment.

Rationale

Digital tools can facilitate collaboration and communication by opening pathways to a global learning environment. All learners share the responsibility to practice and advocate the safe and responsible use of these digital tools.

Technology Content Standard 3

To satisfy requirements of Technology the Content Standard 3, a student must: apply digital tools and skills with creativity and innovation to express his/herself, construct knowledge and develop products and processes.

Rationale

Digital tools can support creative and innovative expression, which is increasingly necessary in our changing world. The use of these tools can also facilitate the realization and fulfillment of one's talents and interests. The education community has the responsibility to provide access to the new avenues for creation and require nuanced understandings of digital citizenship and ownership.

Technology Content Standard 4

To satisfy the requirements of Technology Content Standard 4, a student must: possess a functional understanding of technology concepts and operations.

Rationale

Solely teaching application- and device-specific skills is no longer sufficient. While core computer skills are required to harness the power of digital tools, these skills need to be adaptable to the quickly changing technological landscape.

Online Resources For Effective Technology Integration and Instruction

These online resources focus on using technology and as a tool and best practices in teaching to enrich the learning of students. The resources reflect the goals of Montana's Technology Standards* The resources are listed in the categories of :

Online Investigations/Projects

Lesson Ideas and Integration

Using Tools and Software

Internet Safety

Professional Development/Tutorials for Teachers and Students

***Montana Technology Content Standard(s)**

I To satisfy the requirements of Technology Content Standard 1, a student must: use digital tools and resources for problem solving and decision making.

II To satisfy the requirements of Technology Content Standard 2, a student must: collaborate and communicate globally in a digital environment.

III To requirements of Technology the Content Standard 3, a student must: apply digital tools and skills with creativity and innovation to express his/herself, construct knowledge and develop products and processes.

IV To satisfy the requirements of Technology Content Standard 4, a student must: possess a functional understanding of technology concepts and operations.

Online Investigations/Projects

Name of Resource Primary Resources and Real World Data

Link <http://eduscapes.com/tap/topic88.htm>

Grade Level(s) K –12

Name of Resource Intel Designing Projects with Essential Questions

Link <http://educate.intel.com/en/projectdesign/>

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/GradeIndex/>

Grade Level(s) K –12

Name of Resource Edutopia

Link <http://www.edutopia.org/tech-integration>

Grade Level(s) K –8

Name of Resource Purpose of Online Investigations and Technology Integration

Link <http://www.bham.wednet.edu/studentgal/onlineresearch/newonline/online.htm>

Grade Level(s) K -8

Name of Resource Primary Resources and Real World Data

Link <http://eduscapes.com/tap/topic88.htm>

Grade Level(s) K -12

Name of Resource Transforming Teaching Through Technology/Marzano
Link http://t4.jordan.k12.ut.us/professional_development/strategies/
Grade Level(s) K –8

Lesson Ideas/Integration

Name of Resource Lesson Plans that Integrate Technology
Link <http://www.bgcs.k12.oh.us/tech/lessonsPri.html>
Grade Level(s) K -12

Name of Resource Technology Integration Guide, Montana Standards
Link <http://www.billings.k12.mt.us/techskills/Benchmarks/primary.html>
Grade Level(s) K -8

Name of Resource Basic Computer Skill Lessons
Link <http://www.emints.org/ethemes/resources/S00000148.shtml>
Grade Level(s) K -8

Name of Resource Teaching Word Processing Skills/Lessons
Link http://www2.lhric.org/eastramapo/techweb/integration/wordprocessing_activities.htm
Grade Level(s) 3-5

Name of Resource Kathy Shrock Lessons to Learn Technology Skills
Link <http://sites.google.com/a/nausetschools.org/technologyk12/Home/etud-components>
Grade Level(s) K -8

Name of Resource Rubrics
Link <http://its.leesummit.k12.mo.us/scoringguides.htm>
Grade Level(s) K -8

Name of Resource Read Write and Think Excellent Integration of Technology/All standards
Link <http://www.readwritethink.org/index.asp>
Grade Level(s) K -8

Name of Resource Science Links
Link <http://www.sciencenetlinks.com/summer/online.cfm>
Grade Level(s) K -8

Name of Resource Social Studies Literacy Units
Link http://www.kent.k12.wa.us/KSD/it/inst_tech/TechClassroom/k6_info_lit_units.html
Grade Level(s) K -8

Name of Resource Thinkfinity
Link http://www.thinkfinity.org/teacher/lesson_plan_content_index.aspx
Grade Level(s) k-12

Name of Resource Trackstar Technology Integration
Link <http://www.4teachers.org/intech/lessons/index.jsp?subject=8&theme=26&topic=>
Grade Level(s) k-12

Using Tools and Software

Name of Resource Using Excel in the Classroom
Link http://www.sabine.k12.la.us/class/excel_resources.htm
Grade Level(s) K -8

Name of Resource Webquests

Link <http://its.leesummit.k12.mo.us/webquests.htm>

Grade Level(s) K -8

Name of Resource Basic Computer Skill Lessons

Link <http://www.emints.org/ethemes/resources/S00000148.shtml>

Grade Level(s) K -8

Name of Resource Smart Boards

Link <http://its.leesummit.k12.mo.us/smartboard.htm>

Link <http://www.amphi.com/departments/technology/whiteboard/lessonplans.html>

Link <http://technology.usd259.org/resources/whiteboards/smartlessons.htm>

Grade Level(s) K -8

Name of Resource Moodle

Link <http://www.wtvi.com/teks/moodle/>

Link http://docs.moodle.org/en/Teaching_with_Moodle

Grade Level(s)

Name of Resource Kidspiration/Inspiration

Link <http://www.uwstout.edu/soe/profdev/inspirationprojects.shtml>

Grade Level(s) K -8

Name of Resource Using an Elmo/Document Camera

Link <http://www.emints.org/ethemes/resources/S00002162.shtml>

Link http://www.umesd.k12.or.us/techlinks_100ideas

Grade Level(s)K-8

Name of Resource Digital Camera

Link <http://coekate.murraystate.edu/camera/ideas.htm>

Grade Level(s)K-8

Name of Resource Teacher Tube

Link <http://www.teachertube.com/>

Grade Level(s)k-12

Name of Resource Kidpix

Link <http://www.suelebeau.com/kidpix.htm>

Link <http://www.uen.org/k12educator/kidpix.shtml>

Grade Level(s)K-5

Internet Safety

Name of Resource Internet Safety

Link http://its.leesummit.k12.mo.us/internet_safety.htm

Grade Level(s) K -12

Name of Resource FBI Internet Safety

Links <http://www.fbi.gov/publications/pguide/pguidee.htm>

Grade Level(s) K -8

Professional Development/Tutorials for Teachers and Students

Name of Resource Tutorials Excel, Powerpoint, Word

Link <http://its.leesummit.k12.mo.us/tutorials.htm>

Name of Resource Internet4 Classroom Tutorials

Link <http://www.internet4classrooms.com/on-line.htm>

Name of Resource Podcasts for Professional Development

Link <http://www.speedofcreativity.org/resources/videos-for-pd/>

Grade Level(s) K -8

Name of Resource *Success through Differentiation & Technology*

Link <http://eduscapes.com/sessions/differentiate/>

Different Reading Levels

Link <http://eduscapes.com/nature/>

Grade Level(s)

Name of Resource Kathy Schrock Professional Development

Link <http://kathyschrock.net/edtechblogs.htm>

<http://kathyschrock.net/slideshows.htm>

Name of Resource Family of Tools for Teachers

Link <http://www.4teachers.org/tools/>

Appendix D, Montana Standards for Technology

Technology Content and Performance Standards
Adopted by the Board of Public Education July 30, 2008
Effective Date August 15, 2008

Montana Standards for Technology

Today's learners—teachers and students—are continually affected by a variety of digital technologies. These technologies have altered their expectations and skills. Traditional instruction alone no longer provides students with all the skills necessary to find personal value and professional success. Therefore, education needs to plan an increasing role in empowering learners to be technologically literate and to integrate digital tools into their lives.

Expectations for student learning are increasing as digital tools make basic tasks easier. We must help students meet these expectations by understanding that:

- *digital technology must be in the hands of all students;*
- *technological literacy includes more than simple mastery of skills;*
- *digital citizens must use digital tools safely and responsibly;*
- *learning environments are no longer constrained by school walls; they are global and personal;*
- *digital technology skills are acquired, developed, and mastered at an individual pace;*
- *access to tools and flexible networks are critical for learner success*

While digital technology tools can be used to facilitate assessment of student learning, the primary application of these tools must be used to support content area learning. Although integrated learning systems can be used to deliver curriculum true technology integration involves dynamic interactions among learners using digital tools.

Inquiry-based learning activities, rich in relevant content and integrated with digital technology, can facilitate collaboration, critical thinking, creativity, and problem solving. Properly applied, technology enhances learning and instruction, but does not become the focus. By providing access to information and tools for expression, opening pathways to communication, and facilitating personal understanding, technology supports learning in all subjects.

Pursuant to Article X Sect 1(2) of the Constitution of the state of Montana and statutes §20-1-501 and §20-9-309 2(c) MCA, the implementation of these standards must incorporate the distinct and unique cultural heritage of Montana American Indians.

Technology Content Standard 1

To satisfy the requirements of Technology Content Standard 1, a student must: use digital tools and resources for problem solving and decision making.

Rationale

As personal and global problems become more complex, digital tools are powerful vehicles for data collection and analysis, collaboration, and presentation of solutions. Therefore, all learners must select and use digital tools to make sound, accurate, data-supported decisions and presentations.

Benchmarks

The ability to:

End of Grade 4	End of Grade 8	Upon Graduation End of Grade 12
<ol style="list-style-type: none">1. identify and investigate a problem and generate possible solutions;2. collect data and information using digital tools;3. organize collected data and information using a variety of digital tools;4. identify the accuracy, diversity and point of view, including Montana American Indians, of digital information;5. share information ethically and note sources.	<ol style="list-style-type: none">1. use multiple approaches to explore alternative solutions;2. collect relevant data and information on a subject from a variety of digital resources;3. analyze and ethically use data and information from digital resources;4. compare accuracy, diversity, relevance and point of view, including Montana American Indians, of digital information;5. share data and information ethically and appropriately cite sources.	<ol style="list-style-type: none">1. use multiple approaches and diverse perspectives, including Montana American Indians, to explore alternative solutions;2. collect relevant data and information on a subject from a variety of digital resources;3. select from an array of digital tools to organize and analyze data from a variety of resources;4. evaluate and synthesize data and information;5. share data and information ethically and appropriately cite sources.

Technology Content Standard 2

To satisfy the requirements of Technology Content Standard 2, a student must: collaborate and communicate globally in a digital environment.

Rationale

Digital tools can facilitate collaboration and communication by opening pathways to a global learning environment. All learners share the responsibility to practice and advocate the safe and responsible use of these digital tools.

Benchmarks

The ability to:

End of Grade 4	End of Grade 8	Upon Graduation End of Grade 12
<ol style="list-style-type: none">1. identify and explore online collaboration and communication tools;2. identify and explore safe, legal, and responsible use of digital collaboration and communication tools;3. communicate the results of research and learning with others using digital tools;4. explore how technology has expanded the learning environment beyond the traditional classroom.	<ol style="list-style-type: none">1. select and use online collaboration and communication tools;2. use digital collaboration and communication tools in a safe, legal, and responsible manner;3. communicate the results of research and learning with others using digital tools;4. use technology in a global learning environment.	<ol style="list-style-type: none">1. evaluate and apply online collaboration and communication tools to exchange ideas and information and participate in projects;2. use digital collaboration and communication tools in a safe, legal, and responsible manner and advocate for such use by others;3. synthesize and communicate the results of research and learning with others using various digital tools;4. apply technology that supports collaboration, learning and productivity in a global environment.

Technology Content Standard 3

To satisfy the requirements of Technology Content Standard 3, a student must: apply digital tools and skills with creativity and innovation to express his/herself, construct knowledge and develop products and processes.

Rationale

Digital tools can support creative and innovative expression, which is increasingly necessary in our changing world. The use of these tools can also facilitate the realization and fulfillment of one's talents and interests. The education community has the responsibility to provide access to the new avenues for creation and require nuanced understandings of digital citizenship and ownership.

Benchmarks

The ability to:

End of Grade 4	End of Grade 8	Upon Graduation End of Grade 12
<ol style="list-style-type: none">1. use digital tools for personal expression;2. use various digital media to share information and tell stories;3. use technology to discover connections between facts;4. understand ownership of digital media;5. use digital tools and skills to construct new personal understandings.	<ol style="list-style-type: none">1. apply a variety of digital tools for personal and group expression;2. use a variety of digital tools to create a product;3. use technology to recognize trends and possible outcomes;4. examine the relationship of copyright to ownership of digital media.5. use digital tools and skills to construct new personal understandings.	<ol style="list-style-type: none">1. develop projects combining multiple digital tools to suit a variety of audiences and purposes;2. evaluate and employ a variety of digital tools to effectively produce an original work;3. use models and simulations to identify trends, predict outcomes, and investigate information;4. evaluate legal protections for intellectual property and apply that understanding to personally created digital media.5. use digital tools and skills to construct new personal understandings.

Technology Content Standard 4

To satisfy the requirements of Technology Content Standard 4, a student must: possess a functional understanding of technology concepts and operations.

Rationale

Solely teaching application- and device-specific skills is no longer sufficient. While core computer skills are required to harness the power of digital tools, these skills need to be adaptable to the quickly changing technological landscape.

Benchmarks

The ability to:

End of Grade 4	End of Grade 8	Upon Graduation End of Grade 12
<ol style="list-style-type: none">1. show skills needed to use communication, information and processing technologies;2. use appropriate terminology when communicating about current technology;3. transfer current knowledge to learning of new technology skills.	<ol style="list-style-type: none">1. apply and refine the skills needed to use communication, information and processing technologies;2. use appropriate terminology when communicating about current technology;3. transfer current knowledge to learning of new technology skills.	<ol style="list-style-type: none">1. apply and refine the skills needed to use communication, information and processing technologies;2. use appropriate terminology when communicating about current technology;3. transfer current knowledge to learning of new technology skills.

Foundation Resources:

International Society for Technology in Education. *National Educational Technology Standards for Students*. 2nd Ed. Eugene, Oregon: ISTE, 2007.

Montana Office of Public Instruction. "Montana Content and Performance Standards for Technology." *Administrative Rules of Montana (10.54.7501)* Helena, Mont.: OPI, 2000.

Montana K-12 Technology

Performance Descriptors

A Profile of Four Levels

The Technology Performance Descriptors define students' knowledge, skills, and abilities in the Technology content area on a continuum from kindergarten through grade 12. These descriptions provide a picture or profile of student achievement at four performance levels: advanced, proficient, nearing proficiency, and novice.

Advanced: This level denotes superior performance. (Independently)

Proficient: This level denotes solid academic performance for each benchmark. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

Nearing Proficiency: This level denotes that the student has partial mastery of the prerequisite knowledge and skills fundamental for proficient work at each benchmark. (Guidance)

Novice: This level denotes that the student is beginning to attain the prerequisite knowledge and skills that are fundamental for work at each benchmark. (Assistance)

Content Standard 1: Students use digital tools and resources for problem solving and decision making

Grade 4 Performance Descriptors

Advanced

A fourth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- consistently uses digital tools and resources for problem solving and decision making;
- effectively uses assigned digital tools to identify a problem;
- brainstorms ways to generate possible solutions;
- uses assigned digital tools to collect data and information from a variety of resources;
- uses assigned digital tools to organize data and information;
- effectively identifies accurate and inaccurate information;
- understands diversity and point of view, including Montana American Indians;
- identifies and notes the work of others;
- understands the concept of digital media ownership.

Proficient

A fourth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- uses digital tools and resources for problem solving and decision making;
- effectively uses assigned digital tools to identify a problem ;
- uses guided brainstorming to generate possible solutions;
- explores assigned digital tools to collect data and information from a variety of resources;
- uses assigned digital tools to organize data and information;
- differentiates between accurate and inaccurate information;
- recognizes diversity and point of view, including Montana American Indians;
- recognizes that using the work of others needs to be noted;
- explores the concept of digital media ownership.

Nearing Proficient

A fourth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, examines digital tools and resources for problem solving and decision making;

- with guidance, uses digital tools to identify a problem;
- chooses a solution from a teacher-provided list;
- with guidance, explores assigned digital tools to collect data and information from a variety of resources;
- uses an assigned digital template to organize data and information;
- with guidance, differentiates between accurate and inaccurate information;
- with guidance, recognizes diversity and point of view, including Montana American Indians;
- with guidance, recognizes that using the work of others needs to be noted;
- with guidance, explores the concept of digital media ownership.

Novice

A fourth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- demonstrates limited understanding of digital tools and resources for problem solving and decision making;
- has limited understanding of digital tools used to identify a problem;
- with assistance, chooses a solution from a teacher-provided list;
- with assistance, uses a basic digital tool to collect data and information;
- with assistance, uses an assigned digital template to organize data and information;
- has limited understanding of accurate and inaccurate information;
- has limited understanding of diversity and point of view;
- has limited recognition of the concept of using the work of others;
- has limited understanding of the concept of digital media ownership.

Grade 8 Performance Descriptors

Advanced

An eighth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- independently uses multiple approaches to explore alternative solutions;
- thoughtfully collects relevant data and information on a subject from a variety of digital resources;
- clearly demonstrates analysis and ethical use of data and information from digital resources;
- evaluate the accuracy, diversity, relevance and point of view, including Montana American Indians, of digital information;
- consistently demonstrates ethical practices when sharing data and information;
- appropriately cites sources using multiple styles.

Proficient

An eighth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- demonstrates clear understanding of multiple approaches to explore alternative solutions;
- collects relevant data and information on a subject from a variety of digital resources;
- analyzes and ethically uses data and information from digital resources;
- understands the concepts of accuracy, diversity, relevance and point of view, including Montana American Indians, of digital information;
- demonstrates ethical practices when sharing data and information;
- correctly cites digital sources.

Nearing Proficient

An eighth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, explores multiple approaches to explore alternative solutions;
- with guidance, collects relevant data and information on a subject from a variety of digital resources;

- with guidance, understands the analysis and ethical use of data and information from digital resources;
- with guidance, occasionally recognizes accuracy, relevance and point of view, including Montana American Indians, of digital information;
- with guidance, demonstrates ethical practices when sharing data and information;
- with guidance, cites digital sources.

Novice

An eighth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- has difficulty selecting approaches to explore alternative solutions;
- has limited success collecting relevant data and information on a subject from digital resources;
- has difficulty analyzing data and information from digital resources;
- has difficulty understanding ethical use of data and information from digital resources;
- has difficulty identifying accuracy, relevance and point of view, including Montana American Indians, of digital information;
- has limited success sharing data and information ethically;
- has difficulty citing sources appropriately.

Upon Graduation Performance Descriptors

Advanced

A graduating student at the advanced level in Technology demonstrates superior performance. He/she:

- independently applies multiple approaches and diverse perspectives, including Montana American Indians, to explore alternative solutions;
- independently and effectively collects relevant data and information on a subject from a variety of digital resources;
- independently explores and implements an appropriate digital tool to organize and analyze data from a variety of resources;
- routinely evaluates and synthesizes data and information;
- consistently shares data and information ethically;
- independently cites sources in the appropriate style.

Proficient

A graduating student at the proficient level in Technology demonstrates solid academic performance. He/she:

- applies multiple approaches and diverse perspectives, including Montana American Indians, to explore alternative solutions;
- consistently collects relevant data and information on a subject from a variety of digital resources;
- successfully selects from an array of digital tools to organize and analyze data from a variety of resources;
- effectively evaluates and synthesizes data and information;
- shares data and information ethically;
- cites sources in the appropriate style.

Nearing Proficient

A graduating student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, uses multiple approaches and diverse perspectives, including Montana American Indians, to explore alternative solutions;
- with guidance, collects relevant data and information on a subject from a variety of digital resources;
- with guidance, selects from a designated set of digital tools to organize and analyze data from a variety of resources;
- with guidance, evaluates and synthesizes data and information;

- with guidance, share data and information ethically;
- with guidance, appropriately cites sources.

Novice

A graduating student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- has limited success using multiple approaches and diverse perspectives, including Montana American Indians, and difficulty exploring alternative solutions;
- has difficulty finding relevant data and information on a subject from a variety of digital resources;
- has difficulty selecting digital tools to organize and analyze data from a variety of resources;
- can seldom evaluate and synthesize data and information;
- can seldom share data and information ethically;
- has difficulty citing sources.

Content Standard 2: Students collaborate and communicate globally in a digital environment.

Grade 4 Performance Descriptors

Advanced

A fourth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- independently uses digital tools to synchronously and asynchronously communicate with other age-level students outside their classroom environment;
- independently uses digital tools to collaborate with peers on projects and assignments outside their classroom environment;
- identifies and consistently uses safe, legal and responsible practices in using communication and collaboration technologies;
- shares the results of research with peers using digital presentation tools both online and in person;
- independently identifies and uses technologies that provide learning opportunities beyond the traditional classroom.

Proficient

A fourth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- uses digital tools to synchronously and asynchronously communicate with other age-level students in their classroom environment;
- uses digital tools to collaborate with peers on projects and assignments in their classroom environment;
- identifies safe, legal and responsible practices in using communication and collaboration technologies.
- shares the results of research with peers using digital presentation tools either online or in person.
- identifies technologies that provide learning opportunities beyond the traditional classroom

Nearing Proficient

A fourth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, uses digital tools to synchronously and asynchronously communicate with other age-level students in their classroom environment.
- with guidance, uses digital tools to collaborate with peers on projects and assignments in their classroom environment.

- with guidance, identifies safe, legal and responsible practices in using communication and collaboration technologies.
- with guidance, shares the results of research with peers using digital presentation tools either online or in person.
- with guidance, identifies technologies that provide learning opportunities beyond the traditional classroom

Novice

A fourth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, uses simple digital tools to synchronously or asynchronously communicate with other age-level students in their classroom environment.
- with assistance, uses simple digital tools to collaborate with peers on projects and assignments in their classroom environment.
- with assistance, identifies core safe, legal and responsible practices in using communication and collaboration technologies.
- with assistance, shares the results of research with peers using digital presentation tools either online or in person.
- with assistance, identifies basic technologies that provide learning opportunities beyond the traditional classroom.

Grade 8 Performance Descriptors

Advanced

An eighth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- independently selects the most effective digital tools to synchronously and asynchronously communicate with other age-level students in and out of their classroom environment.
- independently selects the most effective digital tools to collaborate with peers on projects and assignments in and out of their classroom environment.
- independently uses safe, legal and responsible practices in using communication and collaboration technologies;
- independently and effectively shares the results of research with peers using a variety digital presentation tools both online and in person;
- independently and effectively uses a variety of technologies to learn beyond the scope of the traditional classroom.

Proficient

An eighth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- selects appropriate digital tools to synchronously and asynchronously communicate with other age-level students in and out of their classroom environment;
- selects appropriate digital tools to collaborate with peers on projects and assignments in and out of their classroom environment;
- consistently uses safe, legal and responsible practices in using communication and collaboration technologies;
- effectively shares the results of research with peers using digital presentation tools both online and in person;
- effectively uses technology to learn beyond the scope of the traditional classroom.

Nearing Proficient

An eighth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, selects appropriate digital tools to synchronously and asynchronously communicate with other age-level students in and out of their classroom environment;
- with guidance, selects appropriate digital tools to collaborate with peers on projects and assignments in and out of their classroom environment;

- with guidance, consistently uses safe, legal and responsible practices in using communication and collaboration technologies;
- with guidance, effectively shares the results of research with peers using digital presentation tools both online and in person;
- with guidance, effectively uses technology to learn beyond the scope of the traditional classroom;

Novice

An eighth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, uses digital tools to synchronously and asynchronously communicate with other age-level students in their classroom environment;
- with assistance, uses digital tools to collaborate with peers on projects and assignments in their classroom environment;
- with assistance, identifies safe, legal and responsible practices in using communication and collaboration technologies;
- with assistance, shares the results of research with peers using digital presentation tools either online or in person.
- with assistance, identifies technologies to learn beyond the scope of the traditional classroom.

Upon Graduation Performance Descriptors

Advanced

A graduating student at the advanced level in Technology demonstrates superior performance. He/she:

- evaluates and independently selects digital tools to synchronously and asynchronously communicate with others outside of the formal classroom environment;
- evaluates and independently selects digital tools to collaborate with others on projects and assignments outside of the formal classroom environment;
- independently uses and advocates to others safe, legal and responsible practices in using communication and collaboration technologies;
- independently and effectively synthesizes and communicates the results of research with others using digital presentation tools both online and in person outside of the formal classroom environment;
- independently and effectively uses technology to learn and teach beyond the scope of the traditional classroom.

Proficient

A graduating student at the proficient level in Technology demonstrates solid academic performance. He/she:

- evaluates and independently selects digital tools to synchronously and asynchronously communicate with others in and out of their classroom environment;
- evaluates and independently selects digital tools to collaborate with others on projects and assignments in and out of their classroom environment;
- consistently uses and advocates to others safe, legal and responsible practices in using communication and collaboration technologies;
- effectively synthesizes and communicates the results of research with others using digital presentation tools both online and in person;
- effectively uses technology to learn and teach beyond the scope of the traditional classroom.

Nearing Proficient

A graduating student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, evaluates and selects digital tools to synchronously and asynchronously communicate with others in and out of their classroom environment;
- with guidance, evaluates and selects digital tools to collaborate with others on projects and assignments in and out of their classroom environment;

- consistently uses and with direction advocates to others safe, legal and responsible practices in using communication and collaboration technologies;
- with guidance, communicates the results of research with others using digital presentation tools both online and in person;
- with guidance, uses technology to learn and teach beyond the scope of the traditional classroom.

Novice

A graduating student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, selects digital tools to synchronously and asynchronously communicate with others in their classroom environment;
- with assistance, selects digital tools to collaborate with others on projects and assignments in their classroom environment;
- with assistance, uses safe, legal and responsible practices in using communication and collaboration technologies;
- with assistance, communicates the results of research with others using digital presentation tools either online or in person;
- with assistance, uses technology to learn beyond the scope of the traditional classroom.

Content Standard 3: Students apply digital tools and skills with creativity and innovation to express themselves, construct knowledge and develop products and process.

Grade 4 Performance Descriptors

Advanced

A fourth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- effectively applies digital tools and skills to create and share personal expressions in a variety of media;
- independently uses digital tools creatively to produce original works uncommon for this grade level;
- applies basic rules of ownership of digital media to their own personal use;
- uses digital tools to develop new understandings by discovering the connections between facts.

Proficient

A fourth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- applies digital tools and skills to create and share personal expressions in a variety of media;
- understands basic rules of ownership of digital media;
- uses digital tools to discover connections between facts.

Nearing Proficient

A fourth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance attempts to apply digital tools and skills to create and share personal expressions in a variety of media;
- with guidance acknowledges basic rules of ownership of digital media;
- with guidance, uses digital tools to discover connections between facts.

Novice

A fourth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance attempts to apply digital tools and skills to create and share personal expressions in a variety of media;

- with assistance, recognizes basic rules of ownership of digital media;
- with assistance, attempts to use digital tools to discover connections between facts.

Grade 8 Performance Descriptors

Advanced

An eighth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- effectively applies a variety of digital tools to create a multimedia product for personal and group expression;
- independently combines digital tools creatively to produce original works that exceed expectations;
- effectively uses technology to predict reasonable trends and outcomes;
- independently applies basic rules of ownership of digital media to their own personal use.

Proficient

An eighth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- applies a variety of digital tools to create a product for personal and group expression;
- uses technology to predict reasonable trends and outcomes;
- understands the relationship of copyright to ownership of digital media.

Nearing Proficient

An eighth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- uses a digital tool to create a product for personal and group expression;
- with guidance, uses technology to predict reasonable trends and outcomes;
- explores the relationship of copyright to ownership of digital media.

Novice

An eighth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, uses a digital tool, to create a product for personal and group expression;
- with assistance, uses technology to predict trends and outcomes;
- with assistance, begins to understand the relationship of copyright to ownership of digital media.

Upon Graduation Performance Descriptors

Advanced

A graduating student at the advanced level in Technology demonstrates superior performance. He/she:

- initiates distinguished multimedia projects combining image, text and sound to suit a variety of audiences and purposes;
- adapts digital tools to create products of a professional quality;
- independently evaluates and employs a variety of digital tools to effectively create innovative work;
- creates models and simulations to identify trends, predict reasonable outcomes, and effectively investigate information;
- independently selects the appropriate legal protections for personally created digital media.

Proficient

A graduating student at the proficient level in Technology demonstrates solid academic performance. He/she:

- develops multimedia projects combining image, text and sound to suit a variety of audiences and purposes;
- evaluates and employs a variety of digital tools to effectively produce an original work;

- uses models and simulations to accurately identify trends, predict reasonable outcomes, and effectively investigate information;
- selects, with support, the appropriate legal protections for personally created digital media.

Nearing Proficient

A graduating student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, develops multimedia projects combining image, text and sound to suit a variety of audiences and purposes;
- with guidance, evaluates and employs a variety of digital tools to produce an original work;
- with guidance, uses models and simulations to identify trends, predict outcomes, and investigate information;
- explores the appropriate legal protections for personally created digital media.

Novice

A graduating student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- develops, with assistance, a multimedia project combining image, text and sound to suit a specific audience and purpose;
- with assistance, evaluates and employs a variety of digital tools to produce an original work;
- with assistance, begins to use models and simulations to identify trends, predict outcomes, and investigate information;
- with assistance, begins to understand appropriate legal protections for personally created digital media.

Content Standard 4: Students possess a functional understanding of technology concepts and operations.

Grade 4 Performance Descriptors

Advanced

A fourth grade student at the advanced level in Technology demonstrates superior performance. He/she:

- independently demonstrates ability to input commands and data into digital devices;
- independently identifies the appropriate digital tool to complete tasks;
- independently uses proper terminology when communicating about technology;
- independently adapts current technology skills to additional and emerging technologies.

Proficient

A fourth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- demonstrates ability to input commands and data into digital devices;
- identifies the appropriate digital tool to complete tasks;
- uses proper terminology when communicating about technology;
- adapts current technology skills to additional and emerging technologies.

Nearing Proficient

A fourth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, demonstrates ability to input commands and data into digital devices;
- with guidance, identifies the appropriate digital tool to complete tasks;
- with guidance, uses proper terminology when communicating about technology;
- with guidance, adapts current technology skills to additional and emerging technologies.

Novice

A fourth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, demonstrates ability to input commands and data into digital devices;

- with assistance, identifies the appropriate digital tool to complete tasks;
- with assistance, attempts using proper terminology when communicating about technology.

Grade 8 Performance Descriptors

Advanced

An eighth grade student at the advanced level in Technology demonstrates superior performance.

He/she:

- independently demonstrates a consistent ability to input commands and data into digital devices;
- independently identifies the best appropriate digital tool to complete tasks;
- independently uses proper terminology when communicating about technology;
- independently adapts current technology skills to additional and emerging technologies;
- teaches others proper usage and core technology skills.

Proficient

An eighth grade student at the proficient level in Technology demonstrates solid academic performance. He/she:

- demonstrates a consistent ability to input commands and data into digital devices;
- identifies the best digital tool to complete tasks;
- uses proper terminology when communicating about technology;
- adapts current technology skills to additional and emerging technologies.

Nearing Proficient

An eighth grade student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology.

He/she:

- with guidance, demonstrates a consistent ability to input commands and data into digital devices;
- with guidance, identifies the best digital tool to complete tasks;
- with guidance, uses proper terminology when communicating about technology;
- with guidance, adapts current technology skills to additional and emerging technologies.

Novice

An eighth grade student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, demonstrates an ability to input commands and data into digital devices;
- with assistance, identifies the appropriate digital tool to complete tasks;
- with assistance, attempts using proper terminology when communicating about technology.

Upon Graduation Performance Descriptors

Advanced

A graduating student at the advanced level in Technology demonstrates superior performance.

He/she:

- independently demonstrates a consistent ability to input commands and data into digital devices;
- independently identifies the best appropriate digital tool to complete tasks;
- independently uses proper terminology when communicating about technology;
- independently adapts current technology skills to additional and emerging technologies;
- teaches others advanced usage and core technology skills;
- adapts existing digital tools to create and process data in innovative ways.

Proficient

A graduating student at the proficient level in Technology demonstrates solid academic performance. He/she:

- demonstrates a consistent ability to input commands and data into digital devices;
- identifies the best digital tool to complete tasks;
- uses proper terminology when communicating about technology;
- adapts current technology skills to additional and emerging technologies;
- teaches others proper usage and core technology skills.

Nearing Proficient

A graduating student at the nearing proficient level in Technology demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Technology. He/she:

- with guidance, demonstrates a consistent ability to input commands and data into digital devices;
- with guidance, identifies the best digital tool to complete tasks;
- with guidance, uses proper terminology when communicating about technology;
- with guidance, adapts current technology skills to additional and emerging technologies.

Novice

A graduating student at the novice level in Technology is beginning to attain prerequisite knowledge and skills that are fundamental in Technology. He/she:

- with assistance, demonstrates an ability to input commands and data into digital devices;
- with assistance, identifies the appropriate digital tool to complete tasks;
- with assistance, attempts using proper terminology when communicating about technology.

Montana Standards for Technology Glossary

Asynchronous Communication - Asynchronous means not occurring at the same time.

Asynchronous refers to content, instruction, and communication between participants (e.g., students and teachers) that occurs at different times, the period of which may vary by circumstance, (e.g., e-mail, threaded discussions, homework, message boards).

Broad perspective - becoming a global thinker, including consideration and possible adaptation of other's views.

Collaboration Tools - Any digital tool that allows for shared input both synchronous and asynchronous (e.g., social networks, wikis, blogs, social bookmarking, forums, video conferencing, online productivity tools).

Collaborate - to work together in small groups or through collaboration tools, to exchange ideas, to develop understandings

Communication Tools - Any digital tool that allows for exchange of information and ideas both synchronous and asynchronous (e.g., email, instant messaging, forums)

Copyright - The idea that the authors of ideas, designs, and products may register their intellectual property with the government, thereby limiting the extent to which others may use and profit from, modify, or perform the protected creation. In the United States, the doctrine of Fair Use allows others to review, comment on, parody, and study copy-written materials with proper citation.

Digital Citizenship - The norms of behavior with regard to technology use. It includes online etiquette, responsible use of technology systems, information and software, safety and security.

Digital Collaboration - Using digital tools for the purpose of collaboration.

Digital Environment - A virtual space that is created using digital tools for collaboration and communication.

Digital Information - written language, audio, or video accessed through digital means.

Digital Media - Any type of information in digital format, including computergenerated text, graphics, audio and animations.

Digital Presentation Tools - Tools that facilitate the sharing of information with others, either locally or in a virtual environment.

Digital Sources - information gathered (written, audio, video) online and noted.

Digital Tools - Inclusive of all hardware and/or software. (e.g., Computers, PDA's, Personal Video Players, personal music players, Word processors, Spreadsheets, Instant messaging, web browsers, web 2.0 tools)

Ethical Use - Respecting the hardware, ownership, privacy, and use of digital tools. (e.g., respecting ownership of intellectual property, being mindful of security and passwords, giving credit to cited sources, exhibiting appropriate behavior online, acknowledging boundaries of privacy)

Flexible Networks - A network environment which adapts with changing and emerging technologies and allows the users to explore interests safely and expediently.

Functional understanding - understanding usage sufficiently to perform day-to-day classroom tasks using digital tools

Global Communication - Refers to student communication outside the traditional classroom to learn collaboratively with other students from around the world.

Global Learning Environment - digital environment that extends the learning beyond the classroom walls

Information and communication technology - "This term is used throughout much of the WORLD (added emphasis) in place of the word *technology*."

Information and Processing Technologies

- Data - data is raw. It simply exists and has no significance beyond its existence (in and of itself). It can exist in any form, usable or not. It does not have meaning of itself.

- Knowledge - knowledge is the appropriate collection of information, such that its intent is to be useful. Knowledge is a deterministic process.

- Understanding - understanding is an interpolative and probabilistic process. It is cognitive and analytical. It is the process by which I can take knowledge and synthesize new knowledge from the previously held knowledge.

- Wisdom - wisdom is an extrapolative and non-deterministic, non-probabilistic process. It beckons to give us understanding about which there has previously been no understanding, and in doing so, goes far beyond understanding itself.

Input Commands - Transferring information to a device with an expected performance result.

Intellectual Property - refers to a range of creations such as music, literature, artistic works, symbols, names, images or designs. Intellectual property law grants owners of such property exclusive rights to govern its use.

Inquiry - "Inquiry is any process that has the aim of augmenting knowledge, resolving doubt, or solving a problem."

Language Hierarchy for Performance Descriptors

- With Assistance - One to one help with step by step learning

- With Guidance - Walk away...less impact....limited input

- At proficient - no language used

- Independently - Students work on their own without guidance

Personal Responsibility - Understanding that personal actions have effects and that individuals are responsible for choices they make.

Synchronous Communication - "Synchronous" means occurring at the same time.

"Synchronous" refers to content, instruction, and communication between participants (e.g., students and teachers) that occurs at the same time even though they may be in different physical locations. For example, instruction in which students and teachers are online at the same time so that a question can be immediately answered (e.g., telephone calls, face-to-face meetings, physical classrooms, chat rooms, and videoconferencing).

Technology operations - basic skills needed to operate digital hardware and software

Web 2.0 - an emerging set of technologies occurring in the World Wide Web that aims to facilitate creativity, information sharing, and, most notably, collaboration among users.