

WEST LINN - WILSONVILLE PUBLIC SCHOOLS



TECHNOLOGY PLAN

“Moving with the future.”

Updated by the
Technology Stewardship Committee
during the
2008-09 School Year
Covering Years 2009 through 2012

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EXECUTIVE SUMMARY

The West Linn - Wilsonville School District has a strong history of creating a comprehensive technology network that supports data, voice and video through sophisticated programs and equipment. The West Linn – Wilsonville community has continued to support technology through passage of capital bonds in 1997 and 2002. As the district completes the Technology Plan as adopted in 2001, the network and hardware remain relatively robust however, as with all technologies, they are becoming dated and must be continually refreshed to keep abreast of new applications and developments such as innovative teaching systems, wireless applications, personal desktop accessories, and new specialized hardware and software.

This plan identifies the next phase of technology of planning for the district. It includes the major goal areas of Leadership, Stewardship, Curriculum and Instruction, Management and Operations, and the Physical Technology Structure and budget needs.

It is the role of **Leadership** to promote and provide the stimulus for innovation, integration and utilization of technologies. Technologies should be integrated through all district areas, levels, and functions; be available and accessible as needed; and be a powerful and exciting enhancement to teaching, learning, and leadership.

The **Technology Stewardship Team** is designed to set direction and implement action for technology acquisition, staff development and evaluation/assessment of technology and applications. One of its major ongoing functions is to keep abreast of current research on effective and efficient uses of technology to enhance the teaching and learning process.

The **Teaching and Learning for Students** component is focused on creating effective and efficient curriculum models, instructional applications and innovation, and a rich learning environment through collaborative instruction and interactive technologies. It includes achievement of technological and informational literacy and a strong focus on research and inquiry.

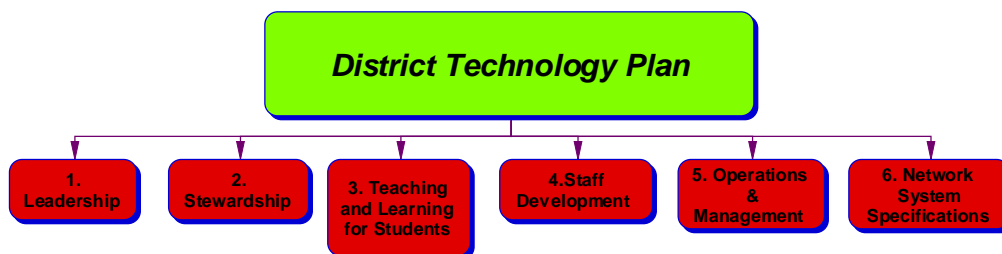
The **Staff Development** component emphasizes the need and process for effective professional learning. The goal is to prepare staff for the integration of technologies into the daily learning in the classroom incorporating the latest research on brain growth, learning and child development.

The purpose of the **Management and Operations** plan is to imagine, fund, create, implement, and deploy technology infrastructure, hardware and software to streamline decisions and maximize resources in the daily operation of the school district. Special focus will be made on minimizing time demands for external reports and other management tasks.

The **Technology Network System Specifications** outlines a system that significantly increases student access to technology and its related resources. The specifications outline a dynamic classroom environment in which use of technology is seamless, transparent, and non-disruptive.

It is important to note a couple of distinguishing characteristics of this plan:

- 1) This plan is intended to be more than the purchase and infusion of technology – the concepts incorporated in this plan embrace an evolving classroom environment characterized by the district’s six vision themes. We believe that instructional strategies and learning environments are undergoing rapid and exciting improvements and that technology is a core piece of these new environments.
- 2) This plan provides our district with a path for moving forward with these new environs. It creates the path, provides methods, and creates the organizational culture for opportunity and growth in teaching and learning. There will be a renewal process to continue to move ahead even as we implement new technologies.



INTRODUCTION

In 1997, the West Linn - Wilsonville School District passed a bond measure that included significant and far-reaching upgrading of the district's technology system and networks. The result of that bond was the creation of a fully networked district with an infusion of new computers in every classroom. In 2002, the community passed another bond measure to move to the next level of technology.

Today, as a result of those bonds, the district network fully supports data, voice and video systems. Each school facility received appropriate electrical and network wiring upgrades. The district created its own telephone system with its own prefix and set of telephone numbers. Video systems provided a growing application for distance learning and video productions.

Extensive work was done to support curriculum applications to enhance teaching and learning for students. Numerous staff development opportunities were offered to enhance staff technology and information literacy. The technology network and systems are fully supported through the district Information Services Department and building technology experts support the network and applications at each school.

While the network system and technologies are still generally robust and effective, as with all technologies, they become dated and need to be refreshed regularly to keep abreast of current technological applications and developments for all components of the district.

There are significant new technological application developments and research on effective teaching and learning with technology that are influencing future network, hardware, and software needs. These trends include wireless applications, rapid growth in PDA applications, specific curriculum hardware and software, assistive technology for children with special needs, and new specialized applications in teaching, learning, and management. Each of these trends will affect the contents of this district technology plan.

Demographics of the District

The West Linn - Wilsonville School District serves a 42 square mile area in Clackamas County, Oregon, serving the communities of Wilsonville, West Linn, and a large unincorporated area between the two cities. The 2006-2007 enrollment is 8340 as of September 2007. Annual enrollment growth has averaged a little over 1% per year for the past 7 years. The District operates 7 primary, 3 middle, 2 high schools, and one charter high school. The District employs 453 teachers, 264 support personnel and 26.5 administrators.

District Mission and Vision Themes

The Mission of the West Linn - Wilsonville School District is: *How do we create a learning community for the greatest thinkers and the most thoughtful people for the world?*

The West Linn - Wilsonville School District community shapes our children's future with knowledge and hope, with tradition and vision. We envision a school learning community which:

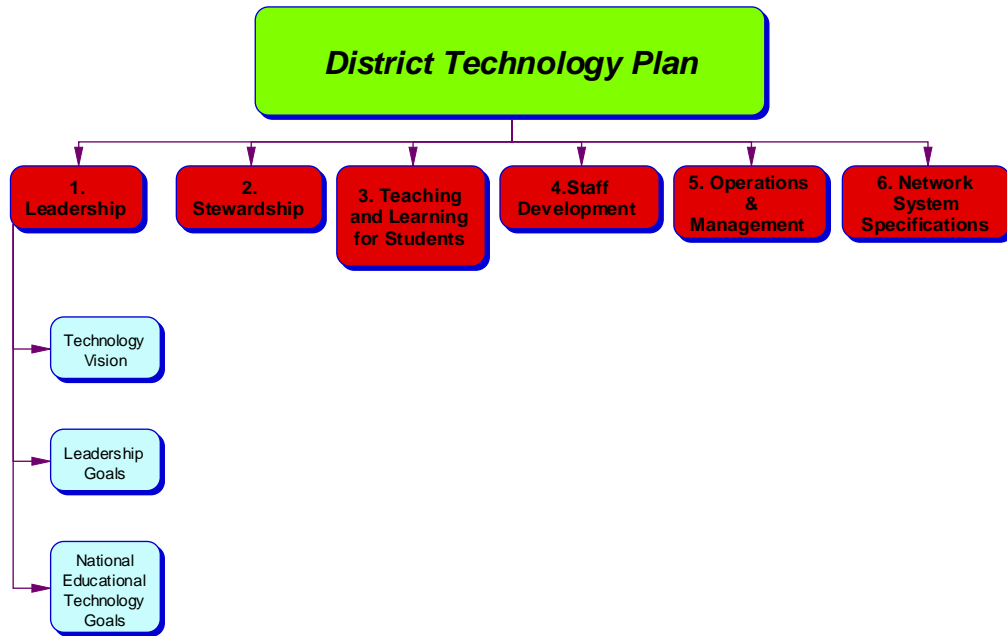
- Demonstrates personal and academic excellence
- Provides a personalized education to improve student performance
- Establishes community partnerships and expands the classroom beyond the school
- Creates a "Circle of Support" for each student
- Educates the whole child
- Integrates technology in daily learning

DISTRICT GOAL STATEMENTS

The Technology Stewardship Team takes into account the influence of central office and building administrators, Teacher-Librarians, the Director of Information Services, and other representatives as needed. Their primary task has been the updating of the district technology plan. Through a series of meetings, the Technology Stewardship Team identified six major goal areas for long range planning:

- 1) Leadership
- 2) Technology Stewardship
- 3) Teaching and Learning for Students
- 4) Staff Development
- 5) Management and Operations
- 6) Technology Structure

LEADERSHIP



Technology Vision

Teachers, students, administrators, and others engaged in the education community must have access to the knowledge, understanding, information, and communication systems that enable and promote high quality teaching, learning, and leadership. We believe technologies must be generalized and specific; universal and specialized; and be capable of “anywhere connectivity.” It is the role of leadership to promote and provide the stimulus of integration and utilization of technologies in the West Linn - Wilsonville School District.

Technologies should be integrated through all district areas, levels, and functions; be accessible and available to all at the level and intensity needed; and, be a powerful and exciting enhancement to teaching, learning, and leadership.

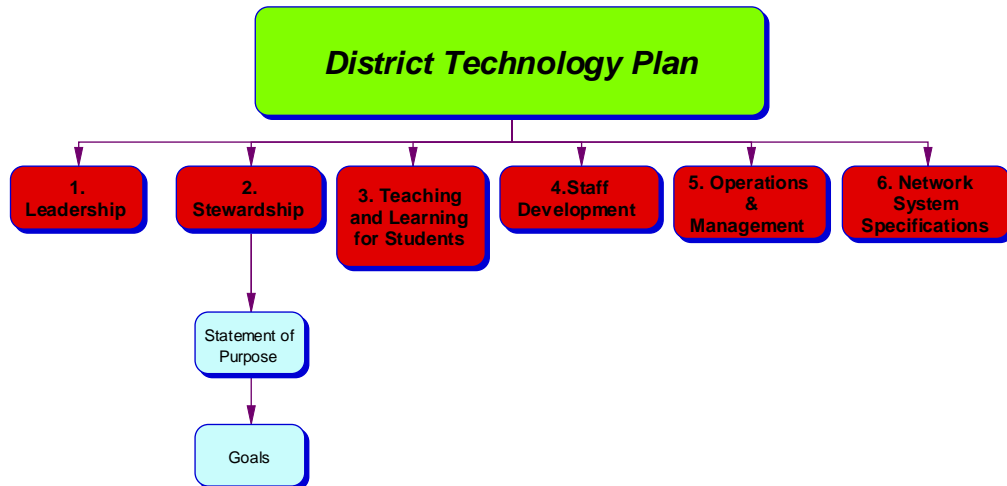
Leadership goals for the implementation of the district vision are:

- 1) Ensure that curriculum design, instructional strategies and learning environments integrate appropriate technologies to maximize learning and teaching with a focus on the National Education Technology Goals (below).
- 2) Promote the shared vision for comprehensive integration of technologies.
- 3) Gather, communicate and provide venues for the implementation of contemporary research on use of technologies to enhance professional practices, student learning and effective and efficient management systems.
- 4) Integrate the use of technologies to support productive systems for learning, teaching, administration, management, and operations.
- 5) Use technologies to plan and implement comprehensive systems of effective assessment and evaluation.
- 6) Promote ethical and responsible use of technologies and model responsible decision-making.

NATIONAL EDUCATIONAL TECHNOLOGY GOALS

- Goal 1:** All students and teachers will have access to information technology in their classrooms, schools, communities and homes.
- Goal 2:** All teachers will use technology effectively to help students achieve high academic standards.
- Goal 3:** All students will have technology and information literacy skills.
- Goal 4:** Research and evaluation will improve the next generation of technology applications for teaching and learning.
- Goal 5:** Digital content and networked applications will transform teaching and learning.

TECHNOLOGY STEWARDSHIP



The Technology Stewardship Team originated in 1994 as part of the stewardship of the district vision theme: **Integrating Technology into Daily Learning**. The actions of the Technology Stewardship Team have been instrumental in delivering the long-range technology plan used for the 1997 and 2002 bond and have subsequently provided extensive guidance and leadership in the implementation of the plan. Activities have ranged from planning the Intel Challenge Grant of 1998, which led to the purchase of over 1800 computers, to assessments of use and distribution. Significant effort has been placed on equity across the district, and universal and seamless access to all services.

The Technology Stewardship Team has engaged in development of the district's web pages, created software purchase guidelines, prepared hardware purchase guidelines and procedures, studied aspects of distance learning, conducted surveys of current skills and needed skills, and studied issues of technology support.

Statement of Purpose

The purpose of the Technology Stewardship Team has been to assist the district in setting directions and implementing action for technology acquisition, staff development, and evaluation/assessment of technology and technology applications in the district.

Integrating Technology into Daily Learning is one of the district's guiding vision themes. As the district moves into the next generation of technology, the Technology Stewardship Team's role will enliven and give guidance to leadership for implementing goals in teaching, learning, and professional development. The TechStew committee will actively study current research of effective teaching and learning with technology, communicate that information through professional development programs, and action research opportunities.

Goals

- 1) Structure and implement an annual study group for reviewing current research on technological applications which enhance teaching and learning.
- 2) Create professional development programs which support the research findings in #1 above.
- 3) Provide guidance in the development and use of specialized applications as well as universal applications
- 4) Assess and provide support for all students and teachers to continually improve technology and information literacy skills.
- 5) Evaluate annual progress toward goal achievement of the district technology plan with a focus on maximizing and optimizing usage.
- 6) Set priorities and guidelines to optimize efficiency of usage.
- 7) Create partnerships with technology and business corporations and integrate them into daily instruction.
- 8) Develop and implement a system-wide, collaborative process to provide recommendations for annual technology budget planning.
- 9) Assist with the planning and implementation of technologies in both the instructional and operations of the district.
- 10) Identify and develop internal and external people and knowledge, and change paradigms to support and integrate technology.
- 11) Develop guidelines for equipment purchasing specifications that insure maximum life and minimal maintenance requirements.

SMART Goals for Ed Tech in West Linn – Wilsonville

Goal 1:

By 2012, 90% of students and teachers will have access to technology in their classrooms, schools, and homes.

Goal 2:

By 2012, all teachers will use technology tools during at least 75% of their daily lessons and activities.

Goal 3:

By 2010, 70% of all students by Grade 8 will be technologically literate based on the new Oregon Diploma and defined by the new Oregon Education Technology Standards. We will show a 10% increase each year until 2012 whereby we will seek 100% compliance.

Goal 4:

By 2012, 70% of teachers will use web 2.0 technologies to supplement their in-class interactions with and among students.

Goal 5:

By 2012, 70% of student's will report using online resources (subscription services and online texts) as a primary means of researching.

Strategies for Accomplishment of Goals

Most of these goals will be assessed by annual completion of surveys targeted at these questions. These surveys will be delivered via the school district's survey system and will be targeted to the specific audience in play. The IT Director will create these surveys and report results to various groups.

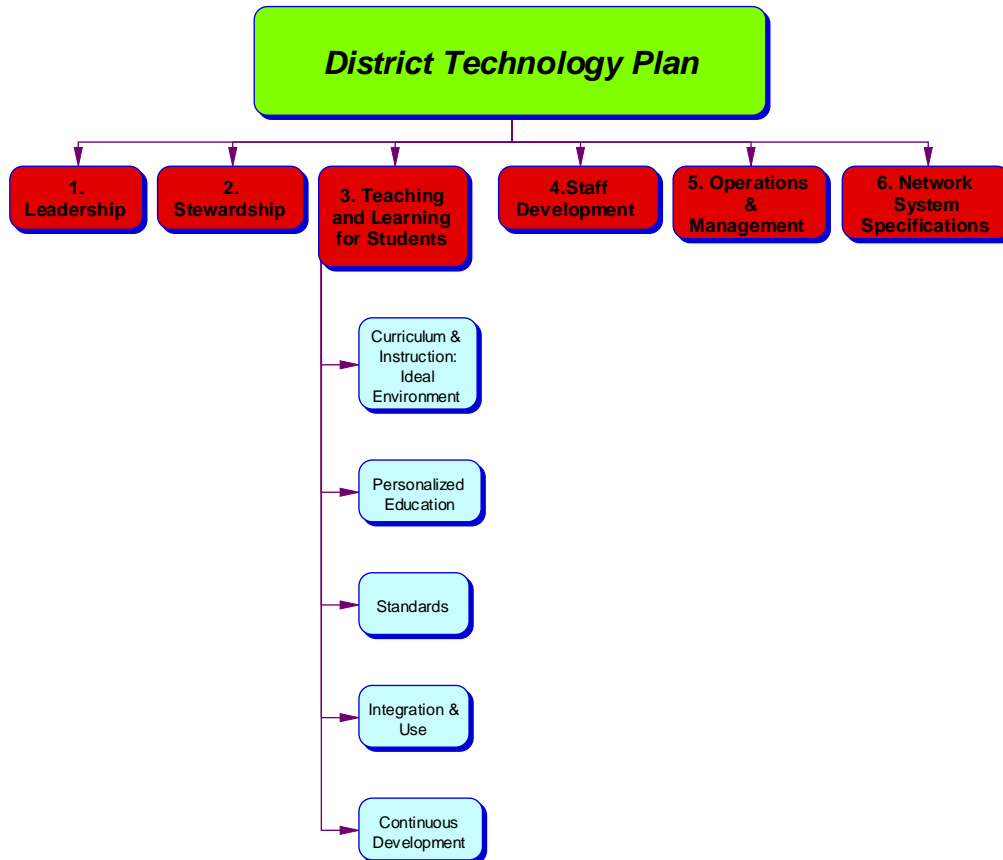
In addition, our regular feedback loops (Students to Teachers, Teachers to Building Leadership/Tech Team, Building Leadership/Tech Team to IT Director, IT Director to District Admin/School Board) will continually feed information both directions and cause real-time adjustments.

LEARNING AND TEACHING FOR STUDENTS

CURRICULUM AND INSTRUCTION

Today's digital divide occurs at a higher level – between those who can use a computer to do valuable work and those who cannot.

-Frank Levy and Richard Murnane



Curriculum and Instruction:

The West Linn-Wilsonville Schools have a well-developed curriculum framework defined by:

- major conceptual themes
- specific content knowledge
- academic research skills
- intellectual skills for inquiry, analysis, and innovative thought

The curriculum is linked to state and national standards in each discipline, and in each area the curriculum recognizes the complex processes of learning. Each discipline is mapped from Kindergarten through grade 12 for coherence. The curriculum is embedded in instruction that is both integrative and inquiry-based. In our classrooms, curriculum arising from children's questions is a way of learning and a way of teaching. It is open, flexible, and responsive to children's interests and developing capabilities. Assessment is authentic and formative, giving children the keys to their own improvement in learning.

Such an approach to learning draws upon children's concerns and questions, actively involving them in planning, executing, presenting, and evaluating a negotiated learning experience. These investigations provide meaningful and purposeful contexts in which the basics like reading, writing, mathematics, and technology are essential tools for discovering and communicating the results of a study.

Broadly, the work of learning advances children's understanding in several ways.

- The study enlarges children's experience and knowledge of the subject or area of study.
- Skills are developed through which the children can control and direct their own learning, including their linguistic, numeric, and manipulative skills.
- Children build concepts that enable them to generalize, organize and relate ideas, and make informed judgments.
- Attitudes, or dispositions, which foster active learning for life are developed, including the willingness to question, listen and observe, concentrate on a task in hand, and deal with ambiguity and complexity.
- Children learn to work individually and cooperatively, engage in multiple revisions, celebrate successes, and use their experience as springboards to further inquiry.

Instruction occurs in complex ways. After posing questions, children embark on an information search. They learn, within the context of the study, to locate, extract, record, interpret, interrogate, and integrate information leading to the construction of knowledge. With a purpose in mind, children explore organizational patterns and select formats that most closely and powerfully match their identified audience and message. They work through draft, revision, and editing phases, completing their efforts with reflection, evaluation, and presentation of their thinking.

These ideals incorporate more than simple technology skills or knowledge. Children are invited to engage in higher-order *expert thinking*. *Expert thinking* requires sustained reasoning, managing complexity, testing solutions, evaluating information, and collaborative thinking in team learning environments. Students are increasing their ability to *use computers as tools that facilitate expert thinking and complex communication*. (Levy and Murnane, 2004). Technology enables the development of learning environments in which these ideals are modeled and practiced. In these learning environments each student's personal access to technology facilitates communication, analysis, creativity, thinking, and decision-making. Educational technologies and relevant curriculum content are interwoven to create the conditions for deep understanding and powerful learning.

The secret joy in work is excellence. -Pearl Buck

Toward Powerful Learning and a Personalized Education

The development of an Ethic of Excellence has a significant history in the West Linn-Wilsonville School District. For most of the last 20 years, the school district has been moving toward more democratic, student-centered schools. Constructivist learning engages children in a process for making meaning. Children develop personal schema and the ability to reflect on their experiences through shared inquiry. Unique outcomes are expected and encouraged as children find their passions, and develop their own voices. Assessment is integral to the learning process and most effective when children are supported in taking control of their journey toward high standards of performance, valuing craftsmanship in thinking and the production of *beautiful work* in every setting. Children increasingly learn to place a personal signature on their own learning.

This approach to learning and the redefinition of roles and responsibilities emerges from and contributes to the district vision for ***Personalized Education***. In this environment, student achievement is soaring.

The following chart shows the movement that now exemplifies most classrooms in West Linn-Wilsonville schools.

From	To
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Single way of learning	Multiple intelligences
Individual classroom focus	School/community focus
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Once a student sees that he or she is capable of excellence,
that student is never quite the same. -Ron Berger*

Best Practices for Instruction

In West Linn-Wilsonville schools, the learning culture mirrors the new world of interactive technologies and character-based collaborative organizations. Many elements of successful corporate and public sector cultures are being transformed from the broadcast, talk-down, authoritarian model to a culture that is open, interactive, collaborative, principle-centered, and thoughtful.

Best Practices in teaching have often been debated and politicized in the United States. The West Linn-Wilsonville School District seeks to maintain coherence with *the strong consensus among the major professional organizations, research centers, and subject-matter groups in American education. The term “Best Practices” is a shorthand emblem of serious, thoughtful, informed, responsible, state-of-the-art teaching* (Zemelman et al, 2005). *Best Practices* in instruction are characterized as student-centered, active, experiential, authentic, democratic, collaborative, rigorous, and challenging.

Some instructional technologies from the past worked only in one direction, to disseminate information. The lecture, broadcast TV, and commercial film are examples. The instructional technologies of the present and future are more open and interactive. Each student is an actor on the stage, a player in the game, interacting in powerful ways with diverse ideas and diverse people.

Learning with Technology

Technology has the potential to change the learning and the learner. In the earliest days with computers in schools, the workbook style activity was transferred to the computer format. Very little changed in the learning, in fact, research showed that basic facts practice, as it was presented in its simple form, did nothing to increase the quick recall of facts.

Technology is now widely used by our students for production. Students use the technological tools available to calculate, to read and write, to tap into streams of live information, to communicate with others, and to do homework. The goals of previous times have been met and now students use technology for so much more.

Teachers and students in West Linn-Wilsonville schools are harnessing the power of graphic organizers for analysis and synthesis. The morphological chart formerly drawn on paper can now be transferred to a database where sorting and analysis take the student to a more complex form of thinking.

Digital video, digital music, graphic multimedia presentations are becoming common in our classrooms. When children are invited to make public presentations of complex learning, the products become exemplars for the next student, the next class. In this way, a rising standard of student performance is emerging in the learning community. These multimedia presentations have become more polished and are used more extensively with new production technologies.

Learning with technologies allows children to do what they could not otherwise do. Well designed software coaches children in mathematics. The Cognitive Tutor software allows students to explore mathematics they do not yet understand, test ideas, fail, and construct a useful understanding of the concept. Well designed writing software coaches children through the complexity of written composition. Webquests and research software link questions to resources and help students juggle the use of multiple sources in a recursive research process.

Simulation software allows children to manipulate and tweak the parameters of the variables in complex situations gaining an understanding of the principles of science and the social sciences. Design software allows children to take on design challenges in robotics, geometry, graphic arts, art, and architecture.

Information search broadens the view from the classroom to global sources. Children have wide access to print, video, and live contact with people and places around the world. Children now take on the greater challenge to evaluate sources and develop a thoughtful and discerning use of information.

Assessment with technology escapes the boundaries of time, becoming timely, personalized, and adaptive. Computer adaptive assessment has greater power to yield useful assessment information for learning.

Learning Into The Future

We live in a time of vast changes that include the accelerating globalization, mounting quantities of information, the growing hegemony of science and technology, and the clash of civilizations. These changes call for new ways of learning and thinking in school, business, and the professions. -Howard Gardner

Gardner suggests five capacities, five minds, needed by professionals in the future:

- *The disciplinary mind* – mastery of major schools of thought (including science, mathematics, history) and of at least one professional craft
- *The synthesizing mind* – ability to integrate ideas from different disciplines or spheres into a coherent whole and to communicate that integration to others
- *The creating mind* – capacity to uncover and clarify new problems, questions, and phenomena
- *The respectful mind* – awareness of and appreciation for differences among human beings
- *The ethical mind* – fulfillment of one's responsibilities as a worker and a citizen

To prepare children for the world they will inherit, the learning experiences we design for them should cultivate facility with the major disciplines. Students should be invited into integrative and creative thinking within and between disciplines. Students' experiences at school and in their wider life should develop the skills and dispositions to use ideas and information for worthy purposes to accomplish *beautiful work*.

Technology Standards

Our schools are educating learners to be technology-capable and information-literate students. To live, learn, and work in an increasingly complex and information-rich society, students must consider information critically and use technology effectively. In alignment with the National Educational Technology Standards (NETS), The West Linn-Wilsonville School District educates students to:

- Use information technology skillfully
- Seek, analyze, synthesize and evaluate information
- Solve problems and make decisions
- Use productivity tools creatively and effectively
- Communicate, collaborate, publish and produce
- Be informed responsible and contributing citizens

The *Technology Foundations Standards* for all students defined by National Educational Technology Standards (NETS) include the following six broad categories.

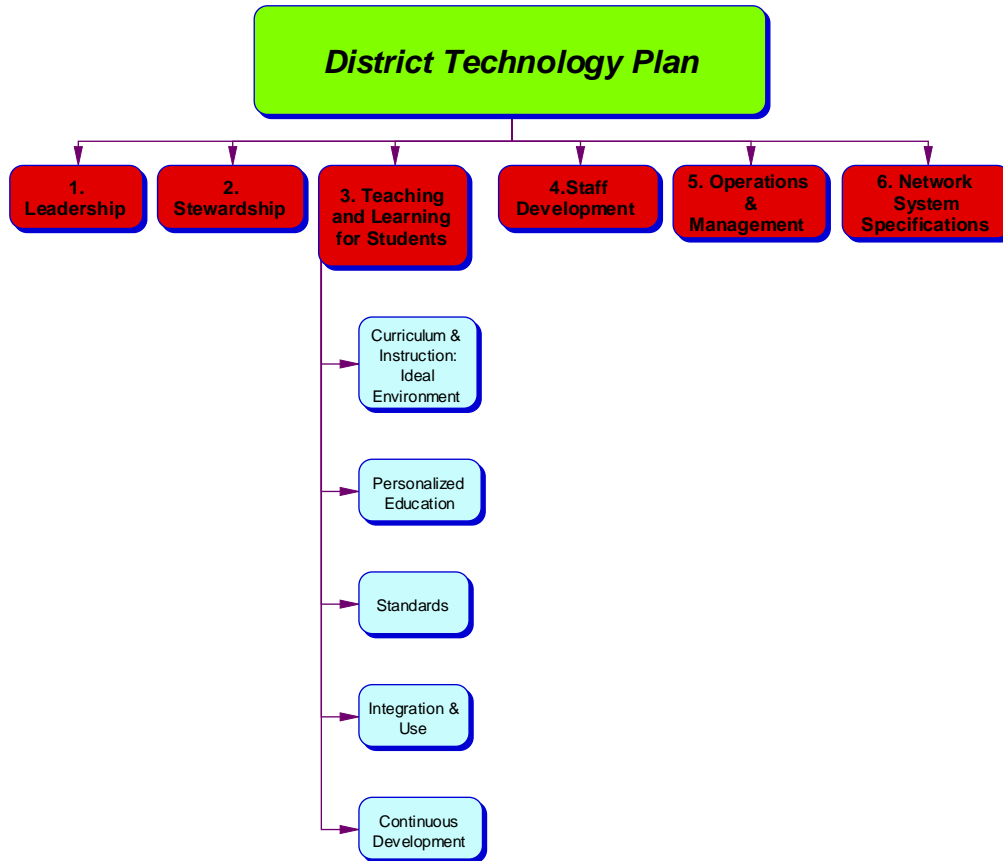
1. Basic Operations and Concepts
2. Social, Ethical, and Human Issues
3. Technology Productivity Tools
4. Technology Communication Tools
5. Technology Research Tools
6. Technology Problem-Solving and Decision-Making Tools

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Learning with technologies allows children to do what they could not otherwise do. Well designed software coaches children in mathematics. The Cognitive Tutor software allows students to explore mathematics they do not yet understand, test ideas, fail, and construct a useful understanding of the concept. Well designed writing software coaches children through the complexity of written composition. Webquests and research software link questions to resources and help students juggle the use of multiple sources in a recursive research process.

Simulation software allows children to manipulate and tweak the parameters of the variables in complex situations gaining an understanding of the principles of science and the social sciences. Design software allows children to take on design challenges in robotics, geometry, graphic arts, art, and architecture.

Information search broadens the view from the classroom to global sources. Children have wide access to print, video, and live contact with people and places around the world. Children now take on the greater challenge to evaluate sources and develop a thoughtful and discerning use of information.

Assessment with technology escapes the boundaries of time, becoming timely, personalized, and adaptive. Computer adaptive assessment has greater power to yield useful assessment information for learning.

Learning Into The Future

We live in a time of vast changes that include the accelerating globalization, mounting quantities of information, the growing hegemony of science and technology, and the clash of civilizations. These changes call for new ways of learning and thinking in school, business, and the professions. -Howard Gardner

Gardner suggests five capacities, five minds, needed by professionals in the future:

- *The disciplinary mind* – mastery of major schools of thought (including science, mathematics, history) and of at least one professional craft
- *The synthesizing mind* – ability to integrate ideas from different disciplines or spheres into a coherent whole and to communicate that integration to others
- *The creating mind* – capacity to uncover and clarify new problems, questions, and phenomena
- *The respectful mind* – awareness of and appreciation for differences among human beings
- *The ethical mind* – fulfillment of one's responsibilities as a worker and a citizen

To prepare children for the world they will inherit, the learning experiences we design for them should cultivate facility with the major disciplines. Students should be invited into integrative and creative thinking within and between disciplines. Students' experiences at school and in their wider life should develop the skills and dispositions to use ideas and information for worthy purposes to accomplish *beautiful work*.

Technology Standards

Our schools are educating learners to be technology-capable and information-literate students. To live, learn, and work in an increasingly complex and information-rich society, students must consider information critically and use technology effectively. In alignment with the ISTE National Educational Technology Standards (NETS), The West Linn-Wilsonville School District educates students to:

- Use information technology skillfully
- Seek, analyze, synthesize and evaluate information
- Solve problems and make decisions
- Use productivity tools creatively and effectively
- Communicate, collaborate, publish and produce
- Be informed responsible and contributing citizens

The *National Technology Foundations Standards for Students* (ISTE, 2007) include the following six broad categories.

1. Creativity and Innovation
2. Communication and Collaboration
3. Research and Information Fluency
4. Critical Thinking, Problem Solving, and Decision Making
5. Digital Citizenship
6. Technology Concepts and Operations

Technological Literacy by Grade 8

The district adopted the “Information Literacy Toolkit” several years ago as a structure for providing instruction in the areas of technology and information literacy. The toolkit outlines specific topics to be introduced at each grade level beginning in Kindergarten with orientation to the mouse and the keyboard, progressing through the use of production tools (word processing, presentation software), to imagineering tools including Inspiration and thought-webbing tools. Students are introduced to targeted web searches in grades 2 and 3 and gradually transitioned into increasingly “open” searching through middle school. Students experience classrooms with multimedia systems in each and routinely use these tools (projectors, document cameras, smartboards, laptops) by 8th grade. Students are introduced to email in grade 4 and, by middle school, use email to receive daily announcements as well as a wide variety of other things, including class assignments and information about their own attendance, grades, lunch account, and much more. Significant time is spent on Internet safety beginning in 2nd grade and continuing through high school.

At the end of 8th grade, students will complete a survey to determine their technological and information literacy. This survey will be created and monitored by our Teacher-Librarians in the schools. This survey will also help assess the effectiveness of our professional development as students will provide feedback on their teacher-initiated technology use.

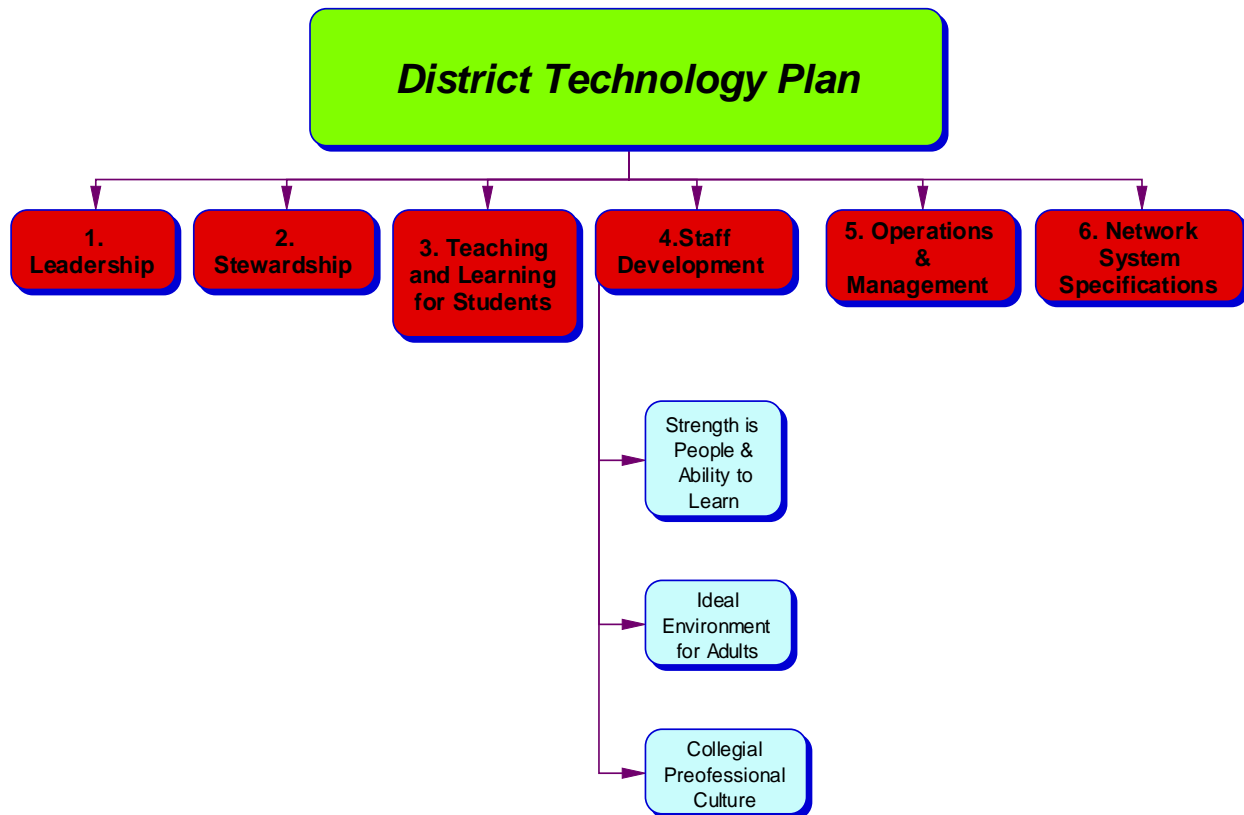
We are also in the process of working with SimpleAssessment to develop student and perhaps staff online assessment of technical literacy and skills, along with the use of these for creation, innovation, communication, collaboration, research & information fluency, critical thinking, problem solving, decision making, and citizenship.

LEARNING AND TEACHING FOR STAFF

PROFESSIONAL DEVELOPMENT

Too many organizations have spent too much time obsessing on the information they want their networks to carry and far too little time on the effective relationships those networks should create and support.

- Michael Schrage, MIT



Our Strength Lies in our People and in Our Ability to Learn

Professional development in The West Linn-Wilsonville School District is both generous and engaging. Staff members are invited to participate in rigorous collaborative learning experiences that take on many forms and formats. Graduate level studies, essential readings discussion groups, cohort studies, new teacher study groups, action research projects, and district-wide sponsored speakers and symposiums are some of the most powerful formats used in the past several years. These staff development opportunities engage teachers in wide and ongoing conversation about child development, teaching and learning, and link members of the learning community to the vision themes of the school district.

Professional development is designed in a personalized format with each teacher setting out a professional development plan to guide his or her development. Each year, the teacher and principal agree upon professional development goals to advance teacher learning. The professional goals coordinate with the school goals and contribute to the goals of the school district.

Professional development offerings are designed to create a strong professional culture. In the professional culture of the district, teachers are invited to go where their questions lead. Teachers operating on the edge of their own learning provide leadership for the entire professional community. In this culture of inquiry, teachers ask questions about and grapple with the significant issues of technology in student learning. Far more than simple courses about how technology works, the emphasis for professional development in technology is on the changing role of the teacher, the active role of the learner, and the interface between technology and daily learning. Annual goals for all certified staff

must address how the teacher will adapt to the new teaching and learning environment that is fostered by technology and information literacy as a core concept.

The *Framework for Teaching*, defined by Charlotte Danielson in Enhancing Professional Practice, provides a useful structure for thinking about teacher development. It provides definition of the teacher's responsibilities in four large domains: planning and preparation, classroom environment, instruction, and professional responsibilities. The framework is a tool for teacher reflection, for coaching conversations, and for formative assessment of a teacher's level of practice. We have been using this framework with new teachers and their mentors for several years. Many teachers and principals are now using this framework to understand the dimensions of practice that contribute to strong learning and teaching.

Toward Powerful Learning

Effective learning for the staff parallels the elements of learning and teaching for students.

The learning environments described in the section on **Learning and Teaching for Children** is both capital-intensive and people-intensive. The widespread infusion of technologies calls for a significant capital outlay. But, boxes and wires do not educate. Integration of technologies creates a compelling need for more highly educated teachers – teachers who know how to personalize student learning. Peter Drucker suggests that we are in an *Age of Learning*. In this *Age of Learning*, he asserts, technology can do some of the simpler tasks so that teachers are free to do what teachers do best – to attend to the intellectual, emotional, and ethical development of the child. Teachers will choose technologies to do the more simplistic tasks once required of teachers. More importantly, teachers will select technologies that provide learning opportunities that were not previously available.

Teaching in this way is complex, sophisticated, challenging, and intensely intellectual work. The role of each individual teacher is becoming extraordinarily significant. Successful teachers are those who prepare for their students, not just for their lessons. Successful teachers are more skillful in knowing and understanding individual learners. Successful teachers respond to diverse learners with varied approaches to instruction. Each teacher has a range of strategies and is able to choose the strategy to fit both the content and the learner. Teachers prepare student-centered, divergent learning experiences that draw each and every student to high standards of performance. Teachers in this *Age of Learning* work from student strengths rather than focusing on the weaknesses. Effective teachers carry the belief that every child can be successful. This belief leads to a reorientation of teachers' role and disposition toward teaching.

Highlight my strengths, and my weaknesses will disappear. Maori saying

An Ethical Professional Culture

A vibrant collegial culture takes advantage of formal learning teams, natural collaboration, and differing expertise. **Learning teams** for adults, as for children, mean that people have formal connections defined by assignments, roles, and responsibilities. The development of the skills of team learning is a deliberate focus. Teams are developing collective responsibility for the success of each member and of the whole team. Teams reflect on their work and in the planning process ask themselves, "How could we make this better, stronger?" The *Culture of Critique* and the skills of teaming are being taught and practiced through dialogic processes, action research, critical friendship techniques, dialogue, and varied protocols for group inquiry.

Natural collaboration for adults, as for children, means that people work together in varied and flexible groups. Everyone comes to the table, the task, or the discussion with a unique interest and piece of the truth. Natural collaboration requires openness, respect, a relentless drive to improve, and an unlimited capacity for inquiry.

Differing expertise is a concept that recognizes the unique contributions of each learner. Different questions, different experiences, different lenses through which one makes meaning all contribute to differing expertise. When adults working together recognize each other for their differing expertise, a rich culture of collaboration develops. The West Linn-Wilsonville School District is uniquely prepared to support the requests of a single teacher or a group of teachers who identify an interest or staff development need. The tuition reimbursement format, the PDC grant format, staff development days, summer curriculum money, and grant money from several federal grants, all are

designed to be responsive to teacher staff development needs. One of the most prominent forums for teacher learning is the *Celebration of Collaborative Inquiry*, our annual action research symposium.

Professional Development is designed with the following components of effective professional development in mind.

- Connection to student learning
- Hands-on technology use
- Curriculum-specific applications
- New roles for teachers
- Collegial learning
- Active participation of teachers
- Ongoing process
- Sufficient time
- Technical assistance and support
- Adequate resources
- Continuous funding

Teachers in the West Linn-Wilsonville School District are engaged in the study of many critical issues. Some of the current readings exploring these issues are referenced in the list below. Each of these study areas has an implication for and connection to integrated use of technologies.

1. Brain research and the implications for learning
 - a. Caine and Caine, Sylwester, Jensen
2. Learning theory and the implications for instruction
 - a. Berger, Lickona and Davidson, Gardner, Perkins
3. Discipline-based studies
 - a. Current studies in the content and pedagogy of each discipline: Calkins, Routman, Keene, Painter, NCTM focus documents, First Steps Mathematics, TIMSS report for mathematics and science teachers, Project 2061, First Steps Literacy, Every Child a Reader, McREL Teaching Reading in the Content Areas, Guided Language Acquisition (GLAD), sheltered instruction (SIOP), and proficiency-based assessment for teachers of world languages
4. Issues-based studies
 - a. Ethical dilemmas in schools, assessment for learning, portfolios, conferring and reporting, intrinsic and extrinsic reward, school culture and character education, performance and moral character, using time and space, including all children, the English language learner
5. Systems thinking and schools that learn
 - a. Wheatley, Kellnor-Rogers, Senge, Handy, Barth, Sergiovanni

The District Plan

The emphasis at the district level is to increase our attention to the role of technologies in integrative student research, mathematics and science inquiry, and deep literacy learning. Staff development is designed to address the national standards for students, teachers, administrators, and libraries in technology and information literacy. These are:

- 1) ***Technology Educational Standards for Students*** as outlined in the curriculum document and the companion documents
- 2) ***Technology Educational Standards for Teachers***
- 3) ***Technology Educational Standards for Administrators***

Through coursework and professional development experiences, the district is supporting the implementation of expanded pedagogical strategies. In this culture, teachers are expanding their expertise, learning to harvest the richness of serendipity, and developing the natural collaborations that take advantage of brilliance within the learning community.

Specific Trainings

The district has two major events each year which are teacher-driven and delivered. These events are called the “Teaching and Working Summit” and “The Day of Collaborative Inquiry”. One is held just before school begins and the other is an event held in April each year. Both are full-day events of 45-60 minute sessions covering technology tools and resources as well as their integration into the Teaching, Learning, Administration, Curriculum, and Assessment of the district.

The structure and content of these two events is determined based upon feedback received from teachers and administrators via electronic survey as well as from anecdotal conversation and the leadership of the district. Teachers are asked what topics they would like to attend and are also asked what sessions that they may be able to teach. The T&W Summit schedule of sessions is developed by the IT Director. The Day of Collaborative Inquiry schedule is developed by the Curriculum Director of the district.

All teachers and administrators are required to attend The Day of Collaborative (it is a paid staff development day).

Additionally, each school – through the IT/T-L/Admin leadership team – provide regular on-going training opportunities for all staff throughout the year. Although the specifics are slightly different, each school offers these workshops and trainings approximately every two weeks.

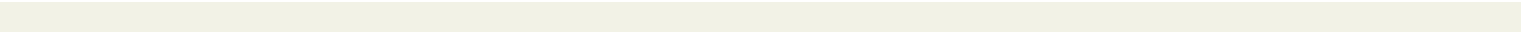
Topics of Training

Regular feedback loops exist all over the district that provide information back to district leadership in regard to the fulfillment of all district initiatives. Many of these loops are verbal or delivered in other non-systematic ways. However, each year the district also solicits more formal feedback as well. Our surveying system is used when more statistical analysis is desired. Below are some results from a survey of staff that was conducted during fall of 2008.

Other surveys are conducted at the school, department, and classroom level as well.

For each item below, indicate the number of days that you use the tool in your teaching.					
	1- Never	2- Less Than Half	3- About Half	4- More Than Half	5- Every Day
Computer	0% (1)	2% (4)	0% (1)	0% (1)	97% (211)
Data Projector	13% (28)	10% (22)	8% (18)	20% (42)	49% (105)
Document Camera	30% (63)	13% (28)	8% (17)	15% (31)	35% (74)
SmartBoard	84% (176)	10% (20)	0% (1)	2% (5)	3% (7)
Laptop Cart	46% (98)	37% (78)	8% (16)	6% (12)	3% (7)
Digital (Still) Camera	27% (57)	47% (101)	15% (33)	7% (14)	4% (9)
Video (Motion) Camera	63% (133)	34% (72)	1% (3)	1% (3)	0% (1)
TV/VCR/DVD	9% (19)	71% (151)	8% (18)	10% (21)	2% (4)

Video Streaming (United Streaming)	44% (95)	40% (86)	11% (24)	4% (9)	0% (1)
Digital Library Resources (WorldBook, ABC-Clio, Facts database, CultureGrams, eLibrary, etc)	31% (66)	48% (104)	13% (28)	8% (17)	0% (0)
Email to Students	39% (85)	37% (80)	9% (19)	11% (23)	4% (9)
Email to Parents of my Students	8% (18)	32% (70)	19% (42)	22% (49)	18% (39)
File Distribution/Collection Utility (for passing out files to your students and then collecting them back)	80% (168)	13% (28)	6% (12)	1% (2)	0% (1)
Web Forms/Surveys	69% (147)	28% (60)	3% (7)	0% (0)	0% (0)
iCal	54% (114)	23% (49)	4% (9)	4% (9)	14% (30)
My School Website	9% (20)	31% (68)	16% (35)	16% (35)	27% (58)
My School Blog	89% (190)	6% (13)	0% (1)	4% (8)	1% (2)



Of the items that you rated at a 3 or lower, select the reasons that contribute to your non-use. (You may select as many choices as appropriate.)

	Percent	Subtotal
Don't know what it is	74%	162
Don't know how to use it	46%	101
Don't know why I would use it	37%	80
Never seems to work	5%	11
Never available (someone else always seem to have it)	21%	47
Simply does not seem appropriate to my teaching	53%	117
Too much effort involved	22%	48
Have tried, but frustrating experiences have been discouraging	16%	36
Not as "good" as "old" ways to do things	4%	9
Don't see the value	6%	13

Of the items rated 3 or higher, please indicate the reasons for your regular use. (You may select as many choices as appropriate.)

	Percent	Subtotal
Engages students more	90%	198
It's routine - Don't even really think about it	80%	175
Makes my teaching more lively and current	63%	137
Increases effectiveness	76%	167
Faster	63%	139
Easy to use	76%	166
Simply better than "old" ways of doing things	47%	102
Students seem to learn better	46%	101
What others expect me to use	18%	40
Gives me credibility with my students	12%	26
Allows me to do my job better	79%	173

ISTE NETS Project: Technology Standards and Performance Indicators for Students

The National Educational Technology Standards for Students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking learning experiences within the Profiles for Technology Literate Students to the standards and performance indicators. Teachers can use the standards and profiles as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.

1. Creativity and Innovation

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

- apply existing knowledge to generate new ideas, products, or processes.
- create original works as a means of personal or group expression.
- use models and simulations to explore complex systems and issues.
- identify trends and forecast possibilities.

2. Communication and Collaboration

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

- a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
- b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- c. develop cultural understanding and global awareness by engaging with learners of other cultures.
- d. contribute to project teams to produce original works or solve problems.

3. Research and Information Fluency

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

- a. plan strategies to guide inquiry.
- b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- d. process data and report results.

4. Critical Thinking, Problem Solving, and Decision Making

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

- a. identify and define authentic problems and significant questions for investigation.
- b. plan and manage activities to develop a solution or complete a project.
- c. collect and analyze data to identify solutions and/or make informed decisions.
- d. use multiple processes and diverse perspectives to explore alternative solutions.

5. Digital Citizenship

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

- a. advocate and practice safe, legal, and responsible use of information and technology.
- b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- c. demonstrate personal responsibility for lifelong learning.
- d. exhibit leadership for digital citizenship.

6. Technology Operations and Concepts

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

- a. understand and use technology systems.
- b. select and use applications effectively and productively.
- c. troubleshoot systems and applications.
- d. transfer current knowledge to learning of new technologies.

Source: ISTE National Educational Technology Standards (NETS) and Performance Indicators for Students (2007)
(http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007.htm)

ISTE NETS Project: Technology Standards and Performance Indicators for Teachers

Effective teachers model and apply the National Educational Technology Standards for Students (NETS•S) as they design, implement, and assess learning experiences to engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community. All teachers should meet the following standards and performance indicators. Teachers:

1. Facilitate and Inspire Student Learning and Creativity

Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. Teachers:

- a. promote, support, and model creative and innovative thinking and inventiveness
- b. engage students in exploring real-world issues and solving authentic problems using digital tools and resources
- c. promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
- d. model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments

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

Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S. Teachers:

- a. design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
- b. develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress
- c. customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources
- d. provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching

3. Model Digital-Age Work and Learning

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

- a. demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations
- b. collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation
- c. communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats
- d. model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning

4. Promote and Model Digital Citizenship and Responsibility

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

- a. advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources
- b. address the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources
- c. promote and model digital etiquette and responsible social interactions related to the use of technology and information
- d. develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools

5. Engage in Professional Growth and Leadership

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

- a. participate in local and global learning communities to explore creative applications of technology to improve student learning
- b. exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others
- c. evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning
- d. contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community

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ISTE NETS Project: Technology Standards and Performance Indicators for School Administrators

Framework, Standards, and Performance Indicators

I. Leadership and Vision:

Educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision. Educational leaders:

- A. facilitate the shared development by all stakeholders of a vision for technology use and widely communicate that vision
- B. maintain an inclusive and cohesive process to develop, implement, and monitor a dynamic, long-range, and systemic technology plan to achieve the vision
- C. foster and nurture a culture of responsible risk-taking and advocate policies promoting continuous innovation with technology
- D. use data in making leadership decisions
- E. advocate for research-based effective practices in use of technology
- F. advocate, on the state and national levels, for policies, programs, and funding opportunities that support implementation of the district technology plan

II. Learning and Teaching:

Educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching. Educational leaders:

- A. identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement
- B. facilitate and support collaborative technology-enriched learning environments conducive to innovation for improved learning
- C. provide for learner-centered environments that use technology to meet the individual and diverse needs of learners
- D. facilitate the use of technologies to support and enhance instructional methods that develop higher-level thinking, decision-making, and problem-solving skills
- E. provide for and ensure that faculty and staff take advantage of quality professional learning opportunities for improved learning and teaching with technology

III. Productivity and Professional Practice:

Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others. Educational leaders:

- A. model the routine, intentional, and effective use of technology
- B. employ technology for communication and collaboration among colleagues, staff, parents, students, and the larger community
- C. create and participate in learning communities that stimulate, nurture, and support faculty and staff in using technology for improved productivity
- D. engage in sustained, job-related professional learning using technology resources
- E. maintain awareness of emerging technologies and their potential uses in education
- F. use technology to advance organizational improvement

IV. Support, Management, and Operations:

Educational leaders ensure the integration of technology to support productive systems for learning and administration. Educational leaders:

- A. develop, implement, and monitor policies and guidelines to ensure compatibility of technologies
- B. implement and use integrated technology-based management and operations systems
- C. allocate financial and human resources to ensure complete and sustained implementation of the technology plan
- D. integrate strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources
- E. implement procedures to drive continuous improvements of technology systems and to support technology replacement cycles

V. Assessment and Evaluation:

Educational leaders use technology to plan and implement comprehensive systems of effective assessment and evaluation.

Educational leaders:

- A. use multiple methods to assess and evaluate appropriate uses of technology resources for learning, communication, and productivity
- B. use technology to collect and analyze data, interpret results, and communicate findings to improve instructional practice and student learning
- C. assess staff knowledge, skills, and performance in using technology and use results to facilitate quality professional development and to inform personnel decisions
- D. use technology to assess, evaluate, and manage administrative and operational systems

VI. Social, Legal, and Ethical Issues:

Educational leaders understand the social, legal, and ethical issues related to technology and model responsible decision-making related to these issues. Educational leaders:

- A. ensure equity of access to technology resources that enable and empower all learners and educators
- B. identify, communicate, model, and enforce social, legal, and ethical practices to promote responsible use of technology
- C. promote and enforce privacy, security, and online safety related to the use of technology
- D. promote and enforce environmentally safe and healthy practices in the use of technology
- E. participate in the development of policies that clearly enforce copyright law and assign ownership of intellectual property developed with district resources

This material was originally produced as a project of the Technology Standards for School Administrators Collaborative.

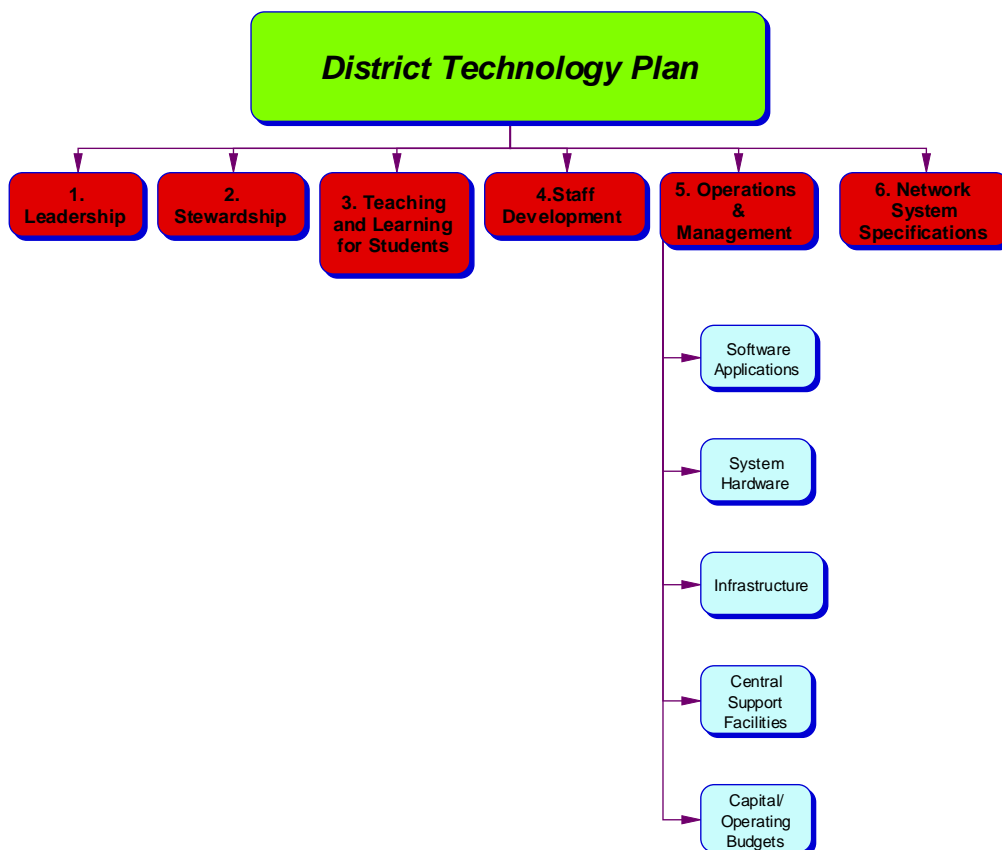
Source: ISTE National Educational Technology Standards (NETS) and Performance Indicators for Administrators (2002)

(http://www.iste.org/Content/NavigationMenu/NETS/ForAdministrators/2002Standards/NETS_for_Administrators_2002_Standards.htm)

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OPERATIONS & MANAGEMENT



The “business” of operating and managing a modern high-performance public school system requires the professional application of technological tools at a level equal to or higher than that associated with any successful business enterprise.

To support necessary and expected educational and curriculum goals, school districts must create and implement basic business strategies in the areas of:

Finance
Printing & Publishing
Transportation
Facility Management
Capital Construction

Personnel
Technology Infrastructure Management
Geographic Distribution
Energy Conservation

Inventory
Food Service
Data Management
Environmental Safety
Public Relations

These fundamental imperatives must be carried out in the most efficient and effective way possible. Advanced technology, as a tool, provides the best, and possibly the only, means by which the public’s business can be routinely assured.

This section of the Technology Plan, therefore, responds to these elementary needs by laying the framework, aside from, but not totally independent of, the educational goals associated with public education.

Stewardship Goals

The term “stewardship” best describes the role the district plays in operating and managing the district’s technological assets. The following goals support that notion:

1. Construct and maintain technology systems that support and enhance learning.
2. Create technology-based solutions to efficiently manage daily operations.
3. Identify and resolve network system inefficiencies.
4. Develop effective funding strategies and budgets to support operational and long-term Technology Plan goals.

Software Applications

Each of the various operational functions of the school district relies on technology to carry out individual department goals in coordination with the district wide vision. Many software components are readily interchangeable between departments and between operations and instruction.

In some cases however, software is not compatible, or applications are specialized for the intended purpose only. Examples include:

- Boundary software that enables forecasting and planning for school attendance boundaries.
- Direct Digital Control software that monitors, manages, and troubleshoots all HVAC equipment district wide.
- Inventory software that manages and records district moveable assets.
- Food Service software that keeps track of lunch tickets and accounts receivable.
- Scheduling Software for extra-curricular and Community Ed building use.
- Student Information Databases for Attendance and Grading, Special Education Tracking, and Standardized Test Score Tracking.
- Variety of financial, personnel, and business programs tailored to specific functions.

Each of these applications requires a process for purchasing, training, daily usage, licensing and upgrading over time. Budgets to support current applications as well as future opportunities must be accommodated.

System Hardware

Similar to software applications, in some cases specialized hardware is necessary to carry out non-instructional functions.

Examples include:

- Computers with exceptional speed and/or memory (PC and/or laptop)
- Application software specific computers
- PDA devices to manage personal time and resources
- Digital photo and video equipment
- Projection devices
- Telephone system hardware components and handsets
- Cellular telephones
- Paging devices
- Security system hardware
- Fire alarm system hardware
- Video head-end and distribution equipment
- Public address system components
- Sound amplification and distribution systems
- Copiers, fax's, printers, routers, servers, TVs, monitors, etc.

Each of these hardware devices serves a specific purpose and greatly enhances the educational experience of students, as well as the productivity and effectiveness of district staff.

Infrastructure

Related to all technology is the built environment in which it is installed and operated.

Furnishings, floor space, voice/data/video connections, electrical power and cooling/ventilation are necessitated by each hardware purchase.

Voice/Data/Video Cabling

Overall, the district has an adequate data and telephone-cabling network. The demands of current applications into the future will put a strain on the existing capacity though. The need to update this wiring with higher capacity and throughput is upon us.

Wireless access to the system is in place throughout all district facilities. The district's local area networks are interconnected via Gigabit wide area circuits provided by Comcast. These circuits support all data and voice traffic in the district.

All buildings have video cabling to each classroom as well as connection to the area cable network. All classrooms have TVs connected to the network.

Although the district is currently wired for most applications and is reasonably flexible in terms of location availability, installation and/or relocation of data/voice port connections is fairly routine. In many cases, the district currently uses private contractors to make these changes.

Electrical Power

All locations except the District Administration building have new adequate line-power electrical entrances. Internal distribution in the older schools remains problematic; however, the addition of circuits and receptacles is achievable. The district does not have an electrician on staff and therefore must contract for all electric technical installation.

The Administration Building is severely limited due to inadequate and aged electrical equipment. Since the main switchgear for telephones and all data network servers are located in the basement, a new electrical entrance, internal switchgear, circuit boards and branch circuits is necessary to maintain the integrity of the entire district technology system.

Heating/Ventilation/Air-conditioning

Eight of the twelve schools in the district are new enough that heating, ventilation and air-conditioning (HVAC) systems are adequate to sustain the heat loads produced by the technology equipment. Sunset, Stafford, Cedar Oak Park, Willamette and the Administration Building cannot expand nor sustain these added loads. The result is interior air quality problems and accelerated degradation of technology hardware due to chronic overheating.

Architectural Design and Construction

Since 1989, the district has been in an almost constant state of construction due to increased enrollment. For this reason, the district has become fairly sophisticated in regard to contemporary design for K-12 educational facilities and has led the Pacific Northwest in cutting-edge design. A significant amount of energy and time has been devoted to integrating technology into the architectural design of all buildings, whether new or remodeled.

Classrooms, Media Centers, Offices and general building spaces have been designed such that technology is a central theme. Examples of successful building design that supports technology based curriculum includes media centers at Rosemont Ridge, West Linn High and Boones Ferry. Athey Creek, Boeckman Creek, West Linn High, Rosemont Ridge and Boones Ferry all take advantage of classroom pods clustered around versatile technology-friendly “porches” that facilitate collaborative teaching and learning.

As the district expands and is renovated, unique and innovative architectural design solutions that respond to technology use should continue.

Capital and Operating Budgets

Fiscal 2001-2002 was the first year the district identified specific budget line items for technology. The operating budget includes funding for technology support personnel, supplies and materials, and minimal equipment replacement due to failure. In Fiscal 2004-05, additional funds were budgeted for expansion of the tech support staff. In Fiscal 2005-06, additional budgetary items were added for software license renewal.

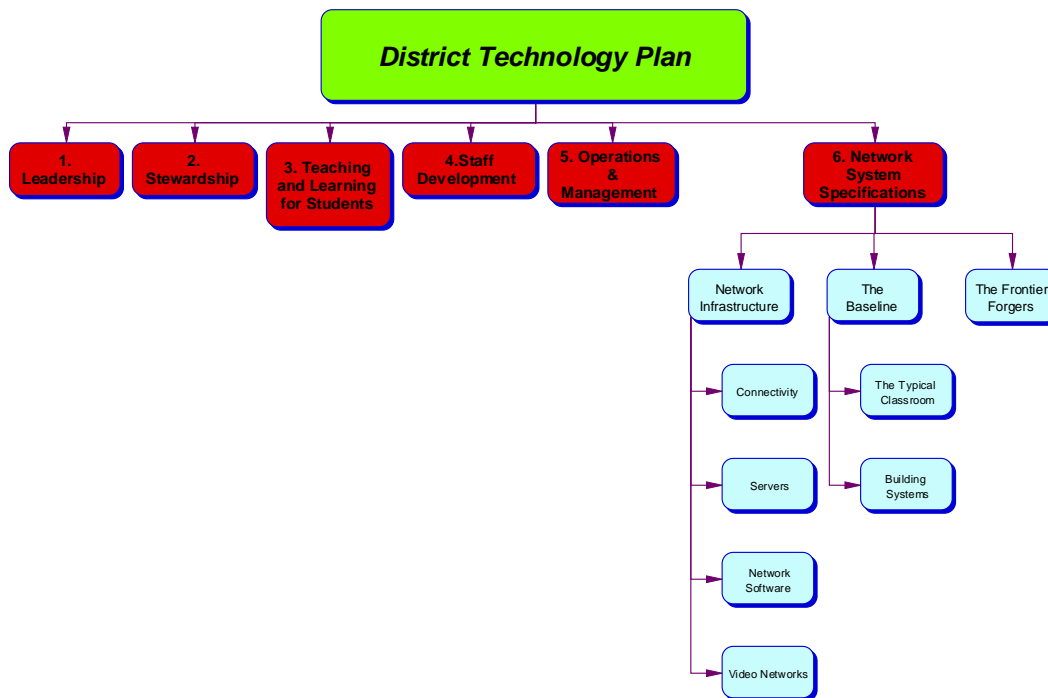
Capital funds come to the district primarily through local bond elections. The 1997 bond provided the infrastructure and some of the hardware/software components in use today. Major upgrades to those components began in 2003 via funds from the 2002 bond. As is typical of all technology, obsolescence is inherent in the industry. As the district expands in both enrollment and capacity to use technology, capital funds for upgrades, enhancement, expansion and system component replacement will be necessary on a regular basis.

Conclusion

Recognizing that the School District is a multi-million dollar business that is held to the highest level of accountability for both public assets and children’s education, “technology” and its successful application is primary to honor and maintain the public trust.

A “systems approach” would require stewardship of the district technology plan in all areas that support education; from academics to support services. Creating, funding, and implementing flexible strategies to maintain and expand these services is imperative; and will assure success for generations to come.

TECHNOLOGY NETWORK SYSTEM SPECIFICATIONS



Overview

As we move ahead with our technology systems, it is clear that we need to go further. Our student to computer ratio is approximately 3.5 to 1. By comparison to our neighboring districts, this ratio is quite good. However, this ratio also means that there are approximately 2.5 students at any time who cannot use our technology. Teachers tell us that one of the biggest obstacles to their daily integration of technology is a simple lack of access, that we need more access.

Our buildings are constructed with learning porches, living rooms, and spaces that allow technology resources to be shared. This has provided access to technology in large groups, small groups, and individually both by direct instruction and by student self-directed use.

However, we have come to realize that our staff and students would use even more, if they could get their hands on it, especially serendipitously. ***Increasing student access to our technology is goal #1 of the System Specifications portion of this plan.***

Our core technology system is robust and strong. We are the only district in the area that provides students with network personal and shared storage space. Every student has a district provided email account and web space. Students can print things in both color and black-and-white. Teachers can distribute notes, worksheets, and other materials to students in their home directory and then collect it back. Teachers can email their entire class with a single address. Teachers can email all parents of the students in their class with a single address. Schools send periodic newsletters and announcements to the students and to the homes via email.

Less Paperful

A recent push is to pursue a paperless environment. And yet, realizing that a true paperless environment does not exist in the near future, we are attempting to become “less paperful”. Students and staff are becoming more aware of paper use by periodic consumption reports. Upon discovery of any form that is in use, we engineer an electronic version that increases effectiveness and encourages better tracking. In the near future, this will stretch all the way to online registration for school itself!

The Standard Classroom

The typical classroom as created will have access to the following technologies:

- Data Projector
- Document Camera
- Phone

- Built-in Speakers
- Multimedia control center
- Digital Camera
- 15 laptops
- Laptop storage cabinet with recharging capabilities

At times, teachers will design lessons that require all students to use a computer (in which case they may borrow a neighboring teacher's set). At other times, the teacher will have students pair up to work on a project. And at still others, students will be allowed to use computers as they deem appropriate. Having ready access to the computers right in the same room as the class will provide opportunity for any and all such uses.

What does it look like...

In every classroom in the district, a teacher will have a full multimedia capable setup that includes projection of computer images as well as still and motion video on a display at least 60 inch in diagonal size. The room will have mounted speakers in the ceiling for ease of listening and appropriate volume. There will be multiple connection types available either in the floor or in the wall. The connections will accept S-Video, RCA video signal, and VGA input as well as DVI and HDMI. The system will integrate with document cameras. Every room will also have remote control of the computer mouse on the projection system and may include the ability to over-draw on the computer images.

Every grade 3-12 classroom will have access to laptops to be used by individuals, groups, or the entire class in a quantity such that no less than 1/2 of the students in the school could be simultaneously using them. Every classroom will also have access to a class set of student response systems.

Because computer needs in grades K-2 are different, each school will have a classroom set of laptops available to all of the K-2 classrooms with one set for the school (two sets at Boones Ferry due to its size).

When this plan is fully realized, we will have somewhere near 6,000 computers in total, probably more.

Shared spaces will continue to have desktop computers available as well. These spaces may be used in a variety of ways, much like they are now. However, they will not be dominated by entire class usage as is often the case as things stand now.

Our phone system will include wired, VoIP-based phones in every occupied room of the building with some additional in shared office spaces. The phones will integrate with the computer network so that a computer with microphone/headphones could become anyone's phone as needed or desired. Phone system changes, modifications, and additions will be managed by our IT staff via a web-based configuration system.

Our video system will migrate to an IP-based solution as well. All video (and the associated audio) will be available via a computer.

Access to our resources will be 24 by 7 by 365. This will be accomplished through redundancy of systems, connections, and power supply. Access to our licensed services will be available via VPN access into the network thus allowing an outside computer to be accessible as if it were inside the network. This opens the door to easier outside access to our subscription-based services. File Servers will be centrally located and managed taking advantage of virtualization technologies to reduce power use.

Many students will bring their own set of electronic tools with them. We will allow and encourage this with great care paid to potential damage and theft of a physical, intellectual, or copyright nature.

Students will use email as a fundamental means of communicating with teachers and each other. Email will also be used as a means of distributing and collecting class materials and assignments. Teachers will also make use of the "My Classes" system to perform these functions as well.

The Web 2.0 technologies of blogging, wikis, and interactive web presence will allow for more timely and integrated discussions and announcements.

Goals:

1. Upgrade the entire core system, and
2. Preserve and enhance end-user applications through a reflective, cyclical infusion process.

Core Implementation

As we expand and enhance our use of technology, the reliance and demands on the core system increases. As such, we plan to update and upgrade the core systems so that they will support the expanded uses of technology into the future. In order to do this, our currently adequate infrastructure will require a boost of stability and currency. In the first summer after the bond (Summer 2009), we would intend to:

- 1) Replace all file servers with latest versions of network software and implement redundant clustering.
- 2) Replace all core network electronics with GB capable devices that handle a higher level of management and support broadcast, multicast, and point-to-point communications. Build in failover redundancy of devices.
- 3) Upgrade existing LAN backbones segments from 1 GB to 10 GB.
- 4) Replace CAT5 and CAT5e in-the-wall network wiring in all buildings with CAT7 (10 GB) or better capable.
- 5) Upgrade network wireless access points to the “N” standard (300 MB-capable) and deploy in a more systematic way that incorporates the benefits of meshing.
- 6) Add remote manageable UPS devices to all wiring closets.
- 7) Add larger grade network manageable UPS devices in main wiring closets of all buildings.
- 8) Add failover power capabilities (alternative power supply) at district office to keep systems functioning through prolonged power outages.
- 9) Install and implement VoIP phone system.
- 10) Install and implement IP-based video/broadcast system.
- 11) Implement LDAP-authenticated VPN access into the district’s network.
- 12) Implement Blackberry Server for Groupwise for handheld device integration and synchronization.

End-User Device Implementation

At the end of the implementation of the 1997 bond money, we realized that the big bang approach of buying a bunch of stuff and then hoping that it would survive/live well into the future, while appropriate at the time when big inadequacies had to be surmounted, has the significant downside of a large quantity of equipment that withered and died near simultaneously with no funding available to replenish/replace the equipment.

We encountered new software and technologies that we could not pursue because the computers themselves were not capable of handling the newer versions of things. Sometimes, the new software itself was not a problem, but things that it required were.

For example, let me describe the saga of something as simple and standard as Adobe Acrobat. In our baseline technology, we licensed a version of Acrobat Standard so that we would be able to create our own PDF files with flexibility above what a PDF print driver provides. As you might expect, Acrobat Standard integrates with Acrobat Reader. As newer versions of Acrobat Reader have become available and “required”, our licensed version of Acrobat Standard costs significant money to be upgraded. If you try to run the new version of Reader with the old version of Standard, neither program will work. They must be on the same major version. Since we did not have the financial means to acquire the updated licenses of Standard, we were stuck not only with an older version of it, but with an older version of Reader as well. This meant that we were simply unable to read some PDF files. Some well-intentioned end-users would update Reader on their own and then experience frustrations with Standard not working. This increased our support costs as we had to spend valuable time rolling things backward, which hardly felt like progress.

With the implementation of the 2002 bond, we slowed ourselves down and implemented a “phasing in” approach that allowed us to have current equipment available at virtually any point in time. It meant that we were able to keep up with the technological advances of the industry. It also acknowledged the differentiated needs and readiness of our staff.

One unexpected consequence of this approach was the way that it encouraged the additional support of parent-teacher groups as well as other external groups. When a new technology was acquired as a part of a rollout and had then proven its worthiness, these groups stepped up with the additional financial support to complete the implementation. For example, in the first rollout, we acquired only a few document cameras. However, shortly after they were in place, some schools immediately experienced their tremendous positive impact. These schools approached their parent groups who provided the means to bring more of these

items into the school immediately. The potential downside of this all-at-once acquisition is that equipment purchased in this manner will reach obsolescence at the same time. However, it was a technology that the school and culture was collectively ready for and thus we have experienced high value from it. In short, the downside was offset because of the significant and immediate upside.

On the flip-side, a slowed-down approach has allowed us to better understand appropriate deployment strategies. This is best manifested through the experimental use of real potential strategies. We have long realized that, even with a phasing in approach, technology often evolves much faster than our collective ability to be discerning users of it. However, there is much wisdom that can be gained from the experience of use. There is nothing quite as significant as “we know it works and is appropriate because we have tried it”. As such, we want to be able to make sure that our staff feels encouraged to pursue and experiment with new technologies. Individuals who go down these roads help the system as a whole understand what is wise, reasonable, and appropriate.

As our curriculum evolves, we continue to move toward a more dynamic and fresh set of materials. Many publishers are providing their materials electronically which has allowed them to deliver more current materials that can evolve over the life of an adoption. However, in order to support this migration, we must have adequate hardware. Sometimes, these things occur as a part of a formal curriculum adoption. However, they can occur due to a particular emphasis of the district as well as evidenced by the district’s recent emphases on wellness and research.

As the infrastructure work is completed and stabilized, we will infuse a large percentage of current technology. Since the plan is to dramatically increase the access to and use of technology, we want to be able to gain the wisdom of experience before a large purchase. As such, we will implement approximately 10% of the plan’s ultimate goals even as core upgrades are occurring. Then, upon completion of the core upgrades, we will infuse approximately 55% more new technology.

And, so that we don’t reach simultaneous obsolescence throughout our systems, we will introduce an additional 35% of the plans goals in year three.

The district currently has approximately 3,300 computers in total; roughly 750 of those are primarily used by staff which leaves about 2,550 that are used primarily by students. There are about 800 laptops and 2,500 desktops. There are about 400 data projectors and 350 document cameras. We have nearly 800 digital cameras and a growing number of video cameras as well.

There are several important things that we have done that make such an inventory of equipment continue to thrive:

1. We have an outstanding staff of well-versed IT support people,
2. We have held strong to hardware and software standardization whenever possible,
3. We maintain a hard drive imaging system which dramatically reduces implementation timelines and support demands, and
4. We have had stability and consistency in our system and our staff.

Our frontline IT support staff of 7 full-time employees supports our 3,300 computers. In the industry, the preferred computer-to-tech support ratio is approximately 60-to-1. According to Justine Nguyen of CNET, in extremely efficient environments, this ratio can approach 125-to-1. In WLWV, this ratio is 470-to-1. As a package, the strategies outlined above have allowed us to expand our system without increasing our IT staff even while keeping it functional and thriving. The size of our support staff, however, will need to expand as we make these leaps forward.

As we build, open, and expand schools in the district, we will accommodate the technological needs of the school through the construction’s Furniture, Fixtures, and Equipment budget. The intent will be to bring the new school to par with the other schools of the district without impacting the technology of other schools in any way.

APPENDIX A

ADDITIONAL ODE REQUIRED PASSAGES

School-to-Home Communication

The district has robust, active websites for each building as well as the district as a whole. Every staff member has an Internet email address and most have a web presence. Every room is equipped with a phone, with a direct number to the outside world. Each facility has a current listserv to communicate electronically with all subscribers (the email addresses are solicited during registration at the start of each year). The district is encouraging teachers to send classroom newsletters and associated materials via email and teacher-level websites. All of our schools provide school-to-home access to student records, including attendance, transcripts, current progress reports, test scores, and financial account balances.

Fulfillment of CIPA Requirements

The school district fully complies with the Children’s Internet Protection Act (CIPA). This is accomplished using the Clackamas ESD’s filtering system. Our Internet Safety Policy is based, though, not on the filtering technology, but on the education of appropriate uses. All student use of the Internet is to be done under the supervision of staff. Students are instructed to not provide any personal information when using email, chat rooms, or other similar electronic communication tools. Although the system is filtered, students are instructed to immediately turn off the monitor and notify an adult when any accidental access to inappropriate material occurs.

Collaboration with Adult Literacy Providers

Our schools and many of the associated technologies are regularly used by members of our community for a wide variety of events and workshops. The district also attempts to work with the local community college and various other community organizations to help insure that the adult community is supported in their technological development. Our relatively high socio-economic community still has pockets in which technology is not readily available. We support that community through keeping our schools open long hours and offering retired equipment to the community. In addition, the district provides on-going public awareness training through our wide variety of means of accessing the home. Among these are our district, school, and teacher websites, our highly developed use of email listservs, and our use of our community access TV channel.

Ongoing Evaluation & Assessment

The district engages in reflective practices in all areas of our organization. These reflective practices inform decision making with regard to changes as we move ahead. These practices take many forms, including surveys, feedback forms, and anecdotal conversation. Several teams – Administrators, IT Specialists, Teacher-Librarians – all provide district level direction. In addition, school level teams – by grade level and/or subject area – also provide feedback regarding direction and decision making.

These assessments touch on equipment but also address questions around staff and student capacity to perform desired activities. These results inform our Staff Development activities and also help us understand the readiness of our patrons for particular technologies in our Curriculum.

Increasing Access – What does it mean?

A major theme of this plan is to increase access to data, information, and tools via technology. Clearly a significant portion of that means increasing inventory of technology. However, it also means deploying it in locations and using strategies that make the equipment available. In our schools, our technology is spread throughout every nook and cranny of our facilities as well as “out in the open”. Upon entering our schools, you visually see technology throughout, in the classrooms, in the open libraries, on our learning porches, in vestibules, and virtually everywhere else.

However, increasing access to the tools is only a part of the equation. Our district invests heavily in reliable, credible electronic research databases of a wide variety of types. These include materials of every media format available – print, audio, video, and multimedia. Students are instructed on the use of these tools annually. Teachers are also reminded of the tools and how to use them periodically throughout the year. All of these databases are available to students for home use as well.

The web filtering system employed by the district rarely blocks material that a teacher has deemed appropriate. However, when such a determination is made, teachers can contact on-site support staff who can temporarily allow such access and initiate a conversation about unblocking the site more permanently.

APPENDIX B

APPROXIMATE BUDGET – TECHNOLOGY BUDGET

Costs/Spending Plan

	Quantity	Cost	Extended Cost	2009-10	2010-11	2011-12
Servers	30	\$ 15,000.00	\$ 450,000.00	\$ 450,000.00	\$ -	\$ -
Backup System	1	\$ 75,000.00	\$ 75,000.00	\$ 75,000.00	\$ -	\$ -
Network Electronics	70	\$ 3,500.00	\$ 245,000.00	\$ 245,000.00	\$ -	\$ -
Video System	70	\$ 2,500.00	\$ 175,000.00	\$ 175,000.00	\$ -	\$ -
VoIP Phone System	1000	\$ 600.00	\$ 600,000.00	\$ 600,000.00	\$ -	\$ -
UPS Power Units	100	\$ 500.00	\$ 50,000.00	\$ 50,000.00	\$ -	\$ -
Wireless Access Points	250	\$ 125.00	\$ 31,250.00	\$ 31,250.00	\$ -	\$ -
Router (DO)	1	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ -	\$ -
VPN Access into the Networks	14	\$ 2,000.00	\$ 28,000.00	\$ 28,000.00	\$ -	\$ -
Laptops	3000	\$ 900.00	\$ 2,700,000.00	\$ 900,000.00	\$ 900,000.00	\$ 900,000.00
Desktops	1000	\$ 750.00	\$ 750,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00
Projectors	450	\$ 1,000.00	\$ 450,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00
Smartboards	100	\$ 1,500.00	\$ 150,000.00	\$ 50,000.00	\$ 50,000.00	\$ 50,000.00
Doc Cameras	450	\$ 800.00	\$ 360,000.00	\$ 120,000.00	\$ 120,000.00	\$ 120,000.00
Digital Camera	450	\$ 200.00	\$ 90,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00
Workgroup Switches	800	\$ 60.00	\$ 48,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00
Video Recording/Editing System	2	\$ 15,000.00	\$ 30,000.00	\$30,000.00	\$ -	\$ -
MS Office Licenses	4000	\$ 75.00	\$ 300,000.00	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00
Anti-Virus Licenses	4000	\$ 10.00	\$ 40,000.00	\$ 13,333.33	\$ 13,333.33	\$ 13,333.33
Various Software Licenses	4000	\$ 125.00	\$ 500,000.00	\$ 166,666.67	\$ 166,666.67	\$ 166,666.67
Student Response Systems	50	\$ 2,500.00	\$ 125,000.00	\$41,666.67	\$41,666.67	\$41,666.67
Vernier Probeware	24	\$ 10,000.00	\$ 240,000.00	\$80,000.00	\$80,000.00	\$80,000.00
Support, Training, and Personnel	36	\$ 40,000.00	\$ 1,440,000.00	\$480,000.00	\$480,000.00	\$480,000.00
Channel 28 Controlling System	1	\$ 15,000.00	\$ 15,000.00	\$15,000.00	\$ -	\$ -
				\$4,156,916.67	\$2,397,666.67	\$2,397,666.67

Source of Moneys

Fall 2008 Capital Bond	\$ 3,500,000.00	\$ 1,750,000.00	\$ 1,750,000.00
General Fund	\$ 500,000.00	\$ 500,000.00	\$ 500,000.00
Construction Excise Tax	\$ 160,000.00	\$ 160,000.00	\$ 160,000.00
	\$ 4,160,000.00	\$ 2,410,000.00	\$ 2,410,000.00

APPROXIMATE BUDGET – CONSTRUCTION BUDGET

				Total Figure	\$2,627,000.00
	Qty	Cost	Extension		
WAN Upgrade	1	\$ 20,000.00	\$ 20,000.00		
WAN Upgrade - others	10	\$ 7,500.00	\$ 75,000.00		
Video Security/Surveillance Cameras	30	\$ 300.00	\$ 9,000.00		
Surveillance Computer	1	\$ 3,000.00	\$ 3,000.00		
Diesel Power Generator (DO)	1	\$150,000.00	\$ 150,000.00		
Board Room Upgrade	1	\$ 75,000.00	\$ 75,000.00		
DO Re-wiring	1	\$ 20,000.00	\$ 20,000.00		
Projector Mounts	450	\$ 200.00	\$ 90,000.00		
Ceiling-Tile Speakers	450	\$ 200.00	\$ 90,000.00		
Multimedia Control Panel	450	\$ 1,000.00	\$ 450,000.00		
Classroom Control System Install	450	\$ 1,500.00	\$ 675,000.00		
Laptop Cabinets	350	\$ 200.00	\$ 70,000.00		
Rewiring Existing Buildings	12	\$ 75,000.00	\$ 900,000.00		

All of these items will be funded by the \$98 million capital bond measure passed in November of 2008

APPROXIMATE BUDGET –BUDGET TO EQUIP NEW SCHOOLS WITH TECHNOLOGY

Primary School (20 Classrooms)

Computers (15*Nbr of Classrooms)	300	\$ 950.00	\$ 285,000.00	
Projectors (Nbr of Classrooms+5)	25	\$ 1,200.00	\$ 30,000.00	
Doc Cameras (Nbr of Classrooms+5)	25	\$ 1,200.00	\$ 30,000.00	
Phones (Nbr of Classrooms + 50%)	30	\$ 850.00	\$ 25,500.00	
WAN Connection	1	\$ 25,000.00	\$ 25,000.00	
Servers	2	\$ 15,000.00	\$ 30,000.00	
Core Electronics	1	\$ 25,000.00	\$ 25,000.00	
Wiring of Building (\$1500 * Nbr of Classrooms + \$10000)	1	\$ 50,000.00	\$ 50,000.00	
Misc Cables, Wires, smaller electronics	1	\$ 75,000.00	\$ 75,000.00	
Video System	1	\$ 15,000.00	\$ 15,000.00	
Total				\$ 590,500.00

Middle School (30 Classrooms)

Computers (25*Nbr of Classrooms)	750	\$ 950.00	\$ 712,500.00	
Projectors (Nbr of Classrooms+5)	35	\$ 1,200.00	\$ 42,000.00	
Doc Cameras (Nbr of Classrooms+5)	35	\$ 1,200.00	\$ 42,000.00	
Phones (Nbr of Classrooms + 50%)	45	\$ 850.00	\$ 38,250.00	
WAN Connection	1	\$ 25,000.00	\$ 25,000.00	
Servers	2	\$ 20,000.00	\$ 40,000.00	
Core Electronics	1	\$ 35,000.00	\$ 35,000.00	
Wiring of Building (\$1500 * Nbr of Classrooms + \$20000)	1	\$ 65,000.00	\$ 65,000.00	
Misc Cables, Wires, smaller electronics	1	\$100,000.00	\$ 100,000.00	
Video System	1	\$ 15,000.00	\$ 15,000.00	
Total				\$1,114,750.00

High School (60 Classrooms)

Computers (25*Nbr of Classrooms)	1500	\$ 950.00	\$1,425,000.00	
Projectors (Nbr of Classrooms+10)	75	\$ 1,200.00	\$ 90,000.00	
Doc Cameras (Nbr of Classrooms+10)	75	\$ 1,200.00	\$ 90,000.00	
Phones (Nbr of Classrooms + 50%)	100	\$ 850.00	\$ 85,000.00	
WAN Connection	1	\$ 25,000.00	\$ 25,000.00	
Servers	2	\$ 30,000.00	\$ 60,000.00	
Core Electronics	1	\$ 50,000.00	\$ 50,000.00	
Wiring of Building (\$1500 * Nbr of Classrooms + \$40000)	1	\$130,000.00	\$ 130,000.00	
Misc Cables, Wires, smaller electronics	1	\$200,000.00	\$ 200,000.00	
Video System	1	\$ 15,000.00	\$ 15,000.00	
Total				\$2,170,000.00

These are all “planning numbers” used to help develop any prospective budgets for any new schools that we may build. The Capital Bond Measure of Fall 2008 provides for the construction of 2 new primary schools to be completed by fall of 2011.