Portland Public Schools

Technology Plan

Enhancing Teaching and Learning Through Technology

2006-2011

Portland Public Schools
Information Technology

Portland Public Schools recognizes the diversity and worth of all individuals and groups and their roles in society. All individuals and groups shall be treated with fairness in all activities, programs and operations, without regard to age, color, creed, disability, marital status, national origin, race, religion, sex, or sexual orientation.

Board of Education Policy 1.80.020-P

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EXECUTIVE SUMMARY

The Portland Public Schools (PPS) Technology Plan outlines the multi-year strategic goals for technology in Oregon's largest school district, enrolling approximately 47,000 students. This plan presents a vision, and serves as a blueprint, for use of technology to help fulfill the mission adopted by the PPS Board of Education, which is to support all students in achieving their very highest educational and personal potential, to inspire in them an enduring love for learning, and to prepare them to contribute as citizens of a diverse, multicultural, and international community. By articulating a clear vision for technology integration that is shared across the district, the plan will promote greater understanding and stronger partnerships among all of the groups with a stake in PK-12 educational excellence: teachers, students, parents, administrators, civic organizations, higher education, and the business community. The results will include expanded use of technology resources to support standards-based teaching and learning in every school and classroom, and higher rates of academic achievement among all of the district's diverse students.

The PPS Technology Plan supports the district's 2005-2010 Strategic Plan by focusing on what is required to support rigorous PK-12 curriculum and instruction, effective and efficient school and district operations, and a robust technology infrastructure. Furthermore, we believe the plan will propel PPS into the forefront of technology-applied educational governance and decision making.

As a responsible and innovative leader in providing quality educational services to a diverse community, and to prepare our students for success in the 21st century, PPS must become more proficient in the use of technology as a tool to support our mission and strategic goals. PPS must be proactive in planning technology integration, in securing the broad-based support necessary to implement the plan successfully, and in monitoring and evaluating its outcomes. The goal for instructional technology in PPS is to increase the number of students and staff who have a sound understanding of and ability to use technology effectively and efficiently in order to: communicate and collaborate; demonstrate new ideas, knowledge, and skills by producing high-quality products; and conduct research, make decisions, and solve problems. PPS graduates must understand technology applications and technical terms. PPS graduates must know how to use technology tools and apply them to solve problems in authentic, real-world contexts. Finally, PPS must prepare students to become life-long learners who can readily adapt to an increasingly sophisticated global economy.

Equity of access and opportunity is one of the guiding values of both the PPS Strategic Plan and the Technology Plan. Technology is an important equalizer: It is by nature non-discriminating to end users and offers unlimited access to vast amounts of information. Conditions or circumstances that might otherwise limit access to learning can be offset, in many cases, by the appropriate application of technology. Technology is thus recognized by PPS as an essential tool in closing achievement gaps and accelerating learning for a large student enrollment from diverse backgrounds and circumstances.

Over the years the Internet has increasingly influenced the way people communicate, work, and collaborate. Advances in the emerging technologies will continue to have a profound effect on occupational and leisure activities in our society, and on educational institutions in particular. To graduate students with the skills needed for future careers and informed decision making, PPS must keep pace by planning for use of new and emerging technologies and –

equally important – must provide the infrastructure, professional development, and resources to support these technologies.

Alignment of Technology Plan Goals with the PPS Strategic Plan

The 2005-2010 Strategic Plan organizes district work and continuous improvement planning around five high-leverage and research-based practices: (1) Excellence in Teaching and Learning, (2) Leadership for Results, (3) Strong Partnerships with Families and Community, (4) Excellence in Operations and Services, and (5) Continuous Learning Ethic. The PPS Technology Plan outlines a set of goals and major activities that align with each of these five key work areas (see pages 9, 28, and 37).

A broad-based committee established by the PPS Office of Information Technology has developed a set of PPS Student Education Technology Standards, Teacher Education Technology Guidelines, and Administrator Education Technology Guidelines that are aligned with national standards and Oregon's Technology Common Curriculum Goals. These standards are designed to inform technology education at the district and local school levels.

In addition to the PPS Strategic Plan, guiding documents for the Technology Plan include the PPS Continuous Improvement Plan submitted to the Oregon Department of Education (and now under revision), and the Central Office Review for Results and Equity (CORRE) Process report prepared from May 2003-January 2005 by the Annenberg Institute for School Reform in partnership with the Portland Schools Foundation. Oregon's Quality Education Model (QEM) has also informed technology planning in PPS.

Technology Budget Strategies

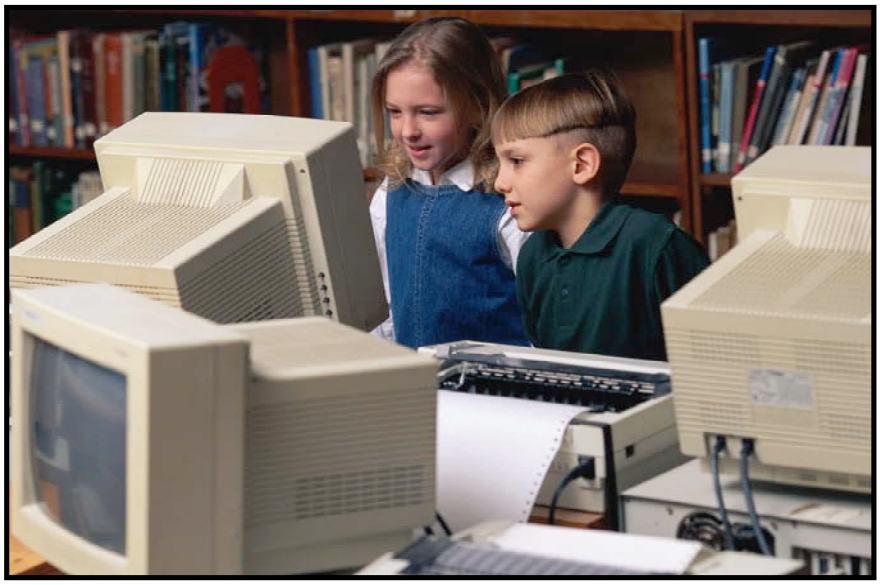
PPS is committed to a long-term funding solution that provides students, teachers, and administrators with appropriate technology to support high-quality learning and accelerate student achievement. The Title IID program now funds almost all of the district's instructional technology initiatives. Financial uncertainties pose an enormous challenge in planning for technology acquisition, deployment, support, and professional development. Provisions of the No Child Left Behind (NCLB) Act and corresponding federal and state accountability standards are increasing the demands on district technology resources. The district's commitment to address technology equity issues for students, schools, and families involves additional expenses. Elimination of librarians and media specialists in many schools has added pressure on technology as a solution. Local and district leadership and effective communication and coordination will be needed to address the funding challenges associated with a comprehensive and robust technology plan.

Monitoring and Evaluation

The district's progress in meeting the goals outlined in the Technology Plan will be monitored against a set of clearly defined benchmarks, and coordinated with other district strategic and continuous improvement planning efforts. The PPS Office of Information Technology conducts regular assessments of the technology infrastructure (telecommunications services, hardware, software, and other resources). The office also has mechanisms for communicating with key stakeholders and coordinates regularly with administrators and staff in the Office of Teaching and Learning, Office of School Leadership, the Superintendent's Leadership Team, and other district programs and departments, as needed. Central office staff will continue to support both

the development and review of local School Improvement Plans (SIP) to ensure their congruence with the district's goals for technology integration.

Evaluation measures will include student achievement data, surveys of teacher literacy in technology, sample classroom artifacts, technology access inventories, and surveys/interviews regarding technology effectiveness and alignment with the PPS Education Technology Standards and Guidelines. The Technology Support Index (TSI), developed by the International Society for Technology in Education (ISTE) has informed development of the PPS Technology Plan and will continue to be used as part of ongoing evaluation and continuous improvement efforts (see Appendix F). The Technology Plan will be reviewed and updated annually.



PORTLAND PUBLIC SCHOOLS 2005-2010 Strategic Alignment Plan

Getting Results, Sustaining Hope!

The GOAL

By the **end of elementary, middle and high school ...**

Every student by name
meets or exceeds **academic standards**, and is fully prepared to make **productive life decisions.**

The VITAL SIGNS of Student Progress

1. Student **attendance** in school and class.
2. Student **embracing & meeting high standards** of learning, wellness and participation in a global society.
3. Student **meeting or exceeding standards** in core subjects.
4. Student participation in the **arts, cultural and extracurricular activities.**
5. Students of all backgrounds and 'circumstances' demonstrate **equivalent or accelerated achievement rates** expected of all (Closing the "achievement gap" and accelerating learning for all).
6. Student **persistence to graduation** (high school graduation rate).
7. Student **success at the next level** (successful transition from grade-to-grade and preK-to-elementary-to-middle-to-high school-to-postsecondary opportunities).

Goals Worthy of Our Commitment | **Equity of Access and Opportunity** | **Trust and Relationships** | **Service and Innovation** | **Shared Leadership and Courageous Action** | **Investing in Each Other's Success**

TIMELESS IDEALS (CORE VALUES)

FIVE BUCKETS OF WORK: High-leverage Practices for Portland Public Schools

1. EXCELLENCE IN TEACHING & LEARNING

1.1 QUALIFIED, EFFECTIVE TEACHER FOR EVERY STUDENT IN EVERY CLASSROOM

1.2 RIGOROUS CORE CURRICULUM, ASSESSMENTS, AND INSTRUCTIONAL RESOURCES, ALIGNED TO STANDARDS AND EXPECTATIONS

1.3 INSTRUCTION INFORMED BY RESEARCH AND DATA WITH CLEAR LEARNING PATHWAYS FOR ALL

2. EXCELLENCE IN OPERATIONS & SERVICES

2.1 INTEGRATED, EVIDENCE-BASED CENTRAL SERVICES RESPONSIVE TO THE NEEDS OF SCHOOLS AND CONSTITUENTS

2.2 SUPPORT SERVICES CHARACTERIZED BY SHARED DECISIONMAKING, CUSTOMER FOCUS AND CONTINUOUS IMPROVEMENT

2.3 CLEAN, SAFE, SECURE ENVIRONMENTS CONDUCIVE TO LEARNING & WORK, WITH RESOURCES AND TECHNOLOGY APPROPRIATE TO THE TASK

5. CONTINUOUS LEARNING ETHIC

5.1 RESEARCH-BASED, DIFFERENTIATED PROFESSIONAL DEVELOPMENT

5.2 CULTURE OF COLLABORATIVE PLANNING, PRACTICE AND REFLECTION

5.3 ACCOUNTABLE PROFESSIONAL LEARNING COMMUNITIES

4. LEADERSHIP FOR RESULTS

4.1 STRONG, CONSISTENT AND CAPABLE LEADERSHIP AT EVERY LEVEL

4.2 UNRELENTING FOCUS ON EVIDENCE-BASED TEACHING-&-LEARNING AND THE ARTFUL USE OF TIME, TECHNOLOGY AND RESOURCES

4.3 CULTURE OF TRUST, CONTINUOUS IMPROVEMENT, EQUITABLE ALLOCATION OF RESOURCES, INCLUSIVITY AND ACCOUNTABILITY

3. STRONG PARTNERSHIPS WITH FAMILIES & COMMUNITY

3.1 AUTHENTIC RELATIONSHIPS THAT EMPOWER STUDENTS, FAMILIES & COMMUNITY

3.2 SAFETY, WELLNESS, AND SOCIAL SUPPORTS FOR CHILDREN AND FAMILIES

3.3 STRATEGIC PARTNERSHIPS WITH BUSINESS, HIGHER EDUCATION, AND COMMUNITY-BASED ORGANIZATIONS

Alignment of PPS Technology Plan and Five High-Leverage Strategic Practices

1. Excellence in Teaching & Learning

1.1 Student information systems facilitate instructional improvement (e.g., Career Information System, CIM/CAM/PASS, Education Plan and Profile, data warehouse).

1.2 Data warehouse provides integrated, accessible, and current information to guide educational decisions.

1.3 Students and teachers have access to technology (e.g., TESA, ELPA, computer labs, software and other resources).

1.4 Technology is integrated with rigorous PK-12 curriculum, assessments, and instructional resources.

1.5 PPS Student Education Technology Standards, Teacher Education Technology Guidelines, and Administrator Education Technology Guidelines are adopted.

2. Excellence in Operations and Services

2.1 IT environment is highly reliable and supports data quality and accessible information systems for various users (students, teachers, administrators, families, community partners).

2.2 Targets for IT availability, level of service, and customer satisfaction are exceeded.

2.3 Technology supports business improvement efforts (e.g., projects are completed on time, on budget, and within the scope of work).

2.4 Reduced "cycle time" for key processes (e.g., hardware/ software ordering, document management, call center responses).

5. Continuous Learning Ethic

5.1 Online professional development resources support anytime/anywhere learning.

5.2 Cross-training opportunities for IT staff enhance knowledge and skills and build professional learning communities.

4. Leadership for Results

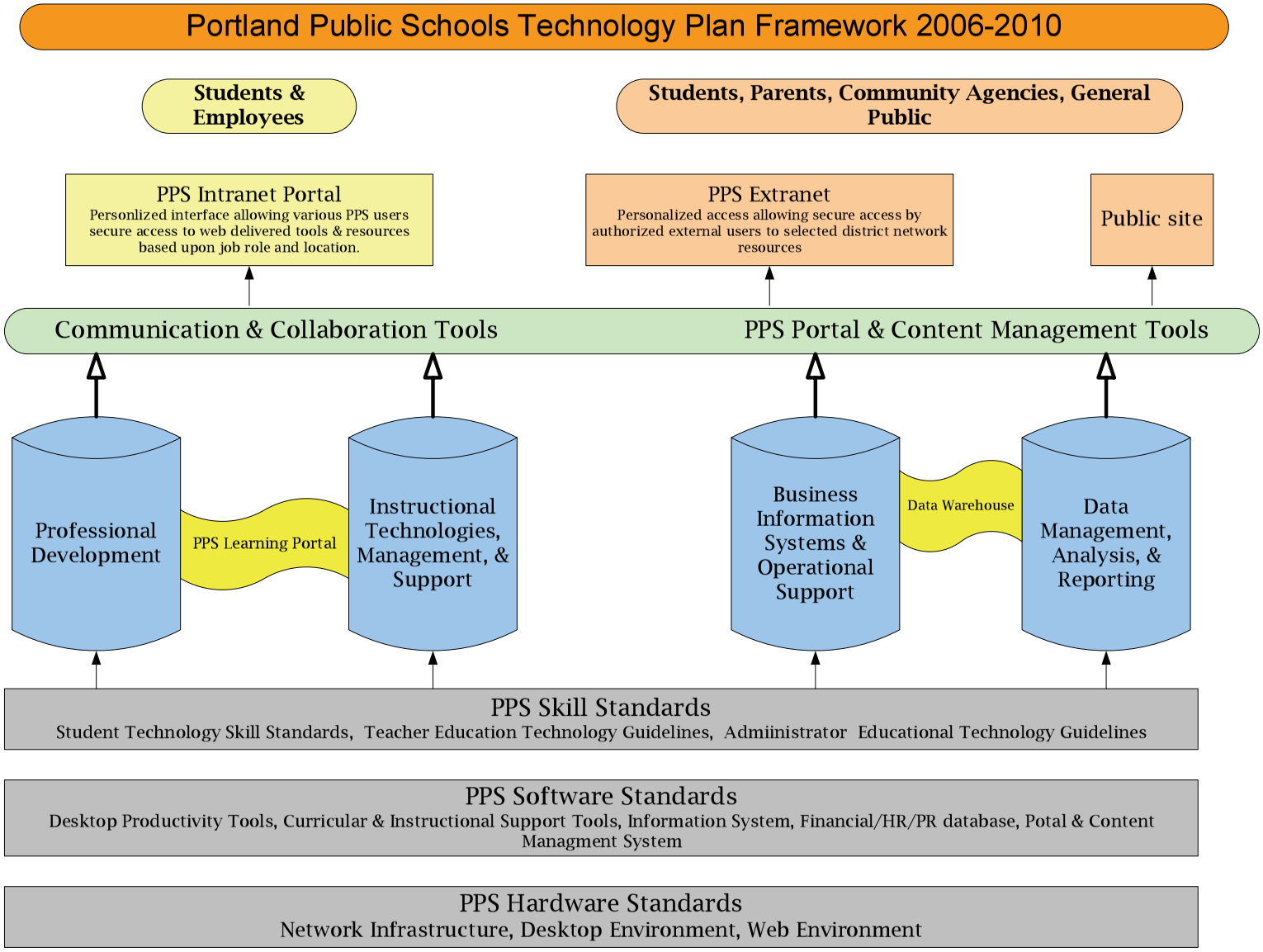
4.1 District norms and culture based on data-driven decision making.

4.2 Leadership at local and district levels supports technology use to achieve district goals, continous improvement efforts, and operational efficiency.

3. Strong Partnerships with Family & Community

3.1 Electronic communication tools engage families and community members as active partners in supporting student achievement and success (e.g., eSIS Parent Assist, web portal).

3.2 Joint public-private investments in IT to benefit the entire community (e.g., data network, wireless networks, data center).


Portland Public Schools Technology Plan Framework 2006-2010
Students & Employees
Students, Parents, Community Agencies, General Public
PPS Intranet Portal
Personlized interface allowing various PPS users secure access to web delivered tools & resources based upon job role and location.
PPS Extranet
Personalized access allowing secure access by authorized external users to selected district network resources
Public site
Communication & Collaboration Tools
PPS Portal & Content Management Tools
Professional Development
PPS Learning Portal
Instructional Technologies, Management, & Support
Business Information Systems & Operational Support
Data Warehouse
Data Management, Analysis, & Reporting
PPS Skill Standards
Student Technology Skill Standards, Teacher Education Technology Guidelines, Admiinistrator Educational Technology Guidelines
PPS Software Standards
Desktop Productivity Tools, Curricular & Instructional Support Tools, Information System, Financial/HR/PR database, Potal & Content Managment System
PPS Hardware Standards
Network Infrastructure, Desktop Environment, Web Environment

INTRODUCTION/RATIONALE

2005-2010 Strategic Plan

Portland Public Schools is Oregon's largest and only urban school district, serving approximately 47,000 students from prekindergarten through grade 12. The district operates more than 100 schools and programs over a 152-square-mile enrollment area and employs over 5,500 personnel. The district's mission, adopted by the PPS Board of Education in 2000, is to support all students in achieving their very highest educational and personal potential, to inspire in them an enduring love for learning, and to prepare them to contribute as citizens of a diverse, multicultural, and international community. "Getting Results, Sustaining Hope!" is the new Strategic Plan approved for 2005-2010 by the PPS Board of Education. Teachers, principals, support staff, students, school board members, parents, union representatives, and community/business representatives were all involved in developing the plan, which sets forth the following district goal: "By the end of elementary, middle, and high school: Every student by name meets or exceeds academic standards, and is fully prepared to make productive life decisions."

The 2005-2010 Strategic Plan will serve as the district's roadmap for continuous improvement of educational practices and student achievement. As illustrated in the 2005-2010 Strategic Plan diagram on pages 7-8, five high-leverage and research-based educational practices define how the district will work to achieve the above goal:

1) Excellence in teaching and learning
2) Leadership for results
3) Strong partnerships with families and community
4) Excellence in operations and services
5) Cultivating a continuous learning ethic among students and staff in every school and central office

Information literacy and the ability to use technology are critical to the academic success of all students in the 21st century. Aligning PPS Technology Plan goals with the Strategic Plan will help ensure that appropriate technologies are: a) accessible to all staff and students; b) integrated into PK-12 curriculum, classroom instruction, and assessment practices across the district; and c) understood and supported by teachers, administrators, families, and community partners. The comprehensive Technology Plan will guide district-wide efforts to prepare students to become technologically literate by the end of eighth grade and to use technology with increasing sophistication to achieve at high levels in every content area through graduation.

Recognizing the uneven distribution of technological skills across the district, the PPS Information Technology Department works to provide

1) Ubiquitous access to network and computing resources;
2) "Anytime/anywhere" access to web-based systems and applications;
3) Targeted technology skill enhancement; and
4) Timely technical support.

However, individual schools are dependent upon the ability and willingness of teachers and administrators to provide daily access to computers as an information tool and to use technology effectively as an integral part of standards-based teaching and learning. Research has shown that educational technology is most effective in raising student achievement when it is planned carefully to meet academic goals, integrated into the curricular framework, and supported by ongoing professional development and technical assistance (White, Ringstaff, and Kelley, 2002). Technology can help teachers improve student engagement with the curriculum (Sandholtz, et al., 1997); better accommodate individual learning styles, interests, and needs (Silverstein et al., 2000); and extend the hours available for learning (Riley, Holleman, and Roberts, 2000). Technology supports high-quality teaching and learning that builds higher-order thinking skills and understanding of complex concepts through collaboration, inquiry, and authentic tasks based on real-world questions and problems (Branford, Brown, and Cocking, 2000).

The PPS Information Technology Department works to help all of the stakeholders understand that technology is a critical tool in raising student achievement and in improving all aspects of curriculum development and instructional delivery. Ensuring that technology is integrated into the PK-12 curriculum and continuous improvement practices requires a partnership between PPS Information Technology and other relevant offices and departments, including the PPS Office of Teaching and Learning, Office of Research and Innovation, and Office of School Leadership.

National Standards

In *National Technology Standards for Students: Connecting Curriculum and Technology*, the U.S. Department of Education and International Society for Technology in Education (ISTE) describe the following "essential conditions" that are required to create learning environments conducive to powerful use of technology:

- Vision and proactive support from the education system
- Educators skilled in the use of technology for learning
- Content standards and curriculum resources
- Assessment of the effectiveness of technology for learning
- Access to contemporary technologies, software, and telecommunications networks
- Technical assistance for maintaining and using technology resources
- Community partners who provide expertise, support, and real-life interactions
- Ongoing financial support for sustained technology use
- Policies and standards supporting new learning environments

ISTE also notes that "most effective learning environments meld traditional approaches and new approaches to facilitate learning of relevant content while addressing individual needs." The resulting learning environments should prepare students to:

- Communicate using a variety of media and formats
- Access and exchange information in a variety of ways
- Compile, organize, analyze, and synthesize information
- Draw conclusions and make generalizations based upon information gathered

- Know content and be able to locate additional information as needed
- Become self directed
- Collaborate and cooperate in team efforts
- Interact with others in ethical and appropriate ways

Knowing which technology tool to use to access information efficiently is another skill that students will need to become proficient life-long learners. By embedding technology into all curriculum strands, teachers prepare students for life-long learning using the technological tools of the future, with broad access to information in a variety of formats.

Districts must also consider the equitable use of technology across schools and classrooms, and among students and teachers. The U.S. Department of Education and North Central Regional Educational Laboratory (NCREL) have identified the following as indicators of equitable technology practices:

- All students master the basic technology literacy skills.
- All students have hands-on technology to complete their learning tasks and enhance their academic achievement.
- All students have access to up-to-date multimedia resources and telecommunications networks to support meaningful, engaged learning.
- All teachers, administrators, support staff, and parents have adequate hands-on technology time for meaningful professional development of technology literacy skills and curriculum integration methods.
- All teachers, administrators, support staff, and parents have access to multimedia resources, telecommunications networks, and online records to support effective educational practices.
- All learners and facilitators of learning have timely access to knowledgeable technical support staff.

Oregon Technology Common Curriculum Goals

While the Oregon Department of Education (ODE) has not established specific content standards and benchmarks in technology, the following Common Curriculum Goals were adopted in 2002:

- Demonstrate proficiency in the use of technological tools and devices.
- Select and use technology to enhance learning and problem solving.
- Access, organize, and analyze information to make informed decisions, using one or more technologies.
- Use technology in an ethical and legal manner and understand how technology affects society.
- Design, prepare, and present unique works using technology to communicate information and ideas.
- Extend communication and collaboration with peers, experts, and other audiences using telecommunications.

PPS Instructional Technology Standards

Portland Public Schools has not established a set of district-adopted technology content standards for students, nor statements of proficiencies and guidelines that would assist teachers and administrators in integrating technology into the PK-12 curriculum. The lack of clear technology content standards similar to those driving all other aspects of curriculum and instruction contributes to a "digital divide" in the district. Socioeconomic factors exacerbate this digital divide; e.g., students from higher-income families tend to have more opportunities to use technology at home to support their academic studies.

The PPS Office of Information Technology established the Educational Technology Advisory Committee to evaluate, develop, and recommend district technology standards. Committee members included teachers, administrators, technology specialists, and other district staff. The resulting PPS Student Education Technology Standards are being recommended for district adoption and support, and are a foundational element of this PPS Technology Plan. From this framework the committee crafted a set of PPS Teacher Education Technology Guidelines, describing the essential skills and knowledge teachers need to help their students achieve a high level of proficiency in the use and application of technology. The committee also developed a set of PPS Administrator Education Technology Guidelines, describing what administrators need to be able to know and do in order to lead and learn with technology in PPS. All of these documents are aligned with the respective International Society for Technology in Education performance indicators for students, teachers, and administrators. The PPS Student Education Technology Standards, Teacher Education Technology Guidelines, and Administrator Education Technology Guidelines are included in Appendix A.

Philosophy and Beliefs Guiding the PPS Technology Plan

Consistent with the research and standards referred to above, the district's development of recommended technology standards and the new PPS Technology Plan has been guided by the following overall philosophy or set of beliefs:

Planning

- Instructional Technology planning is an ongoing process, not an event.
- Broad-based involvement and support are essential for the plan's success.
- The Instructional Technology Plan is data-driven and research-based.
- New technologies should be researched, evaluated for potential, and incorporated when and where appropriate.
- Integrated curriculum and ongoing professional development are critical to realize the potential of new learning technologies.

Technology-Rich Instruction

- Educators who successfully use technology: (1) enthusiastically model effective technology integration, (2) willingly utilize ongoing training and support, and (3) comfortably facilitate self-directed learning.
- Instructional technology increases the volume and variety of information available to learning communities.
- Information must be critically analyzed for validity, accuracy, appropriateness, and relevance.

- Technology is most effective when embedded in learning environments, used as a tool for active construction and demonstration of knowledge and skills, and used to promote higher levels of critical reasoning, creative thinking, and problem solving.
- Technology provides unique opportunities to address the diverse needs of learners.

Rationale for Instructional Technology in PPS

In addition to a common philosophy and set of beliefs, development of the recommended district technology standards/guidelines and the Technology Plan has been guided by three broad goals:

Develop Life-Long Learners

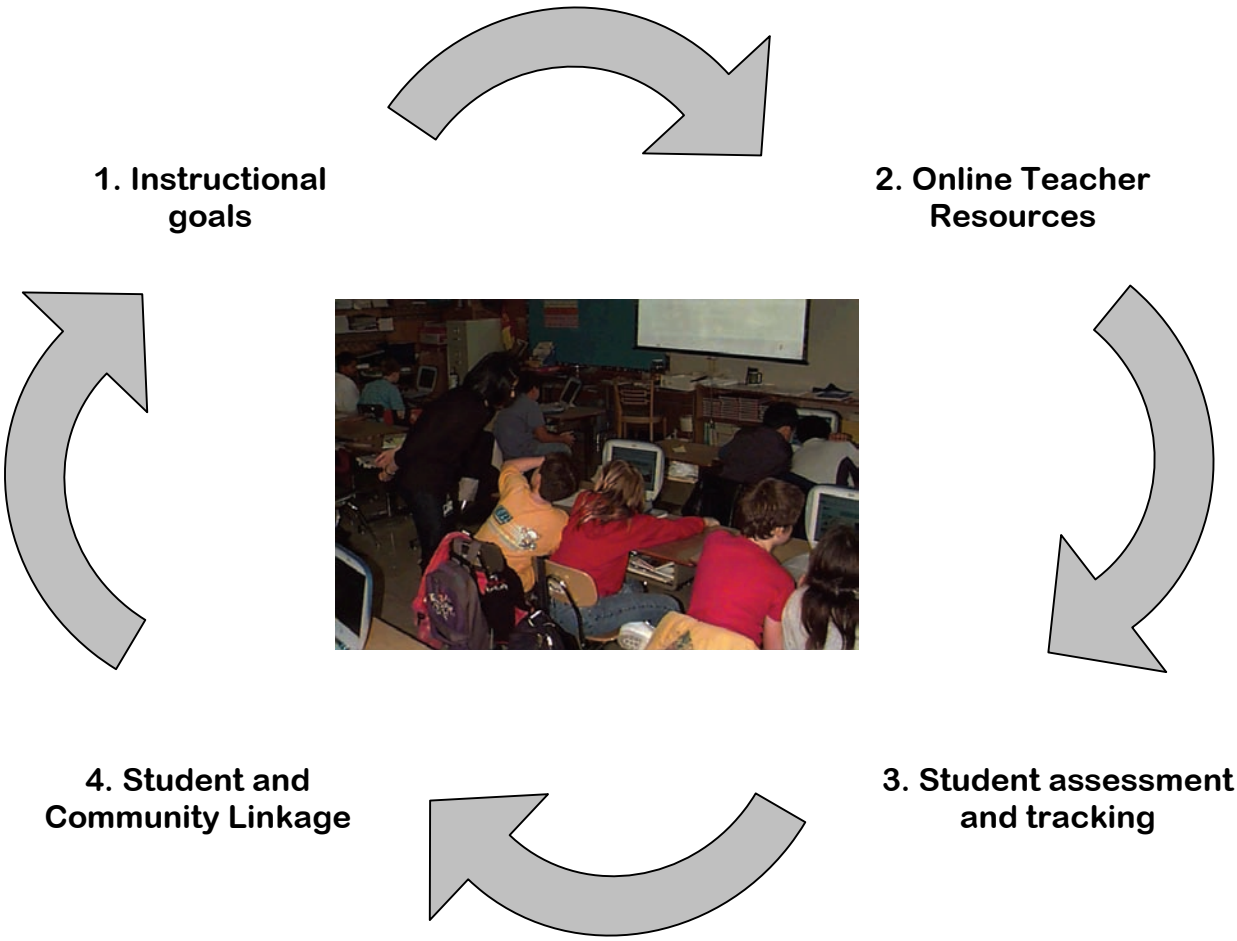
- Promote proficient and productive use of technology to support the development of skills such as: critical thinking, problem solving, collaboration, flexibility, and adaptability.

Integrate Technology into Teaching and Learning

- Increase the ability of learners to communicate effectively, access and process information efficiently, and work productively.
- Encourage active, experiential learning through the introduction and support of media-rich tools, resources, and projects.
- Create a collaborative environment linking classrooms and educators with educational resources and partners locally and globally.

Build a Culture of Continuous Learning among Staff

- Create technology-delivered opportunities for professional collaboration and learning opportunities, including the sharing of best practices.
- Expand the variety of teaching and assessment tools to support differentiated instruction and meet the needs of diverse learners.
- Investigate innovative teaching strategies, technologies, tools, and instructional resources.
- Develop school-based instructional technology plans aligned to school improvement goals.



Technology-Supported Education Model

The above diagram illustrates the technology-supported education model that has guided district planning. With student achievement as the driving purpose, the model leads with district *instructional goals* and how technology can support them. In order to attain those instructional goals we will provide educators with the tools to access *online teacher resources* to make use of powerful student data and strengthen their technology and integration skills. We must have an electronic system for *student assessment and tracking* so teachers can better record and follow student progress to determine the best plan for each student's success. The last element of the technology-supported education model is a link to our *students, families, and community*. The PPS Technology Plan is unlikely to succeed without their involvement and understanding of the instructional goals, necessary resources, and student assessment system.

Instructional Goals

How will we use technology to support instructional goals and student achievement? As described in the National Educational Technology Standards (NETS):

> *"The most effective learning environments meld traditional approaches and new approaches to facilitate learning of relevant content while addressing individual needs. The resulting learning environments should prepare students to:*

- *Communicate using a variety of media and formats*
- *Access and exchange information in a variety of ways*
- *Compile, organize, analyze, and synthesize information*
- *Draw conclusions and make generalizations based on information gathered*
- *Know content and be able to locate additional information as needed*
- *Become self-directed learners*
- *Collaborate and cooperate in team efforts*
- *Interact with others in ethical and appropriate ways*

Teachers know that the wise use of technology can enrich learning environments and enable students to achieve marketable skills. It is still critical, however, that educators analyze the potential benefits of technology for learning and employ it appropriately." (NETS, http://cnets.iste.org/students/s_esscond.html)

Portland Public Schools will select technology and resources to advance instructional goals. As a teaching tool, technology should be implemented only where it supports our academic objectives. As previously described, PPS has developed standards for students, teachers, and administrators that are based on the NETS and designed to support district curriculum and state standards and benchmarks for all content areas (e.g., English/language arts, mathematics, science, social sciences, the arts, second/world languages).

Online Teacher/Student Resources

By providing better access to data and training, PPS can provide teachers and administrators with the necessary scaffolding for employing technology to support instructional goals. Technical systems and resources include:

- The United Streaming service offers all PPS teachers video on demand. There are over 2,600 educational videos that are segmented and can be streamed, downloaded, burned to disk, and easily embedded in classroom activities.
- The PPS Learning Campus is our e-learning program that provides "anytime/ anywhere" training on existing and emerging technologies.
- The Content Management System (CMS) will provide a central online forum for communication and collaboration, allowing users to publish information to the Internet with a minimum of technical support.
- EBSCO, an online periodical database, is available at all locations, and PPS library services will provide additional information and research results.
- The PPS Teacher Resource Page is the link to all of the district's curriculum area websites, which provide resources such as lesson plans, scored student work samples, professional development information, recommended books and articles, and various online resources.
- Free web resources, such as PortaPortal, Blogger, Google, etc.
- Network file-sharing and storage services.

- Career Information System (CIS).
- Education Plan and Profile (EPP).
- Curriculum acquisition software to support the closing of the achievement gap.

Student Assessment and Tracking

Technology in PPS supports assessment and tracking of student progress in meeting the content standards and performance benchmarks required to earn a Certificate of Initial Mastery (CIM). The PPS Technology Plan will also support assessment and tracking of student progress in meeting national and district technology standards. An accountability framework will link desired district outcomes to measurable indicators. These indicators can be tracked and used to monitor progress. District resources include:

- The web-based electronic student information system (eSIS) allows access to real-time student data, an essential element for individualizing instruction.
- As part of several district initiatives (Laptops for Teachers and the 1-to-1 Project at George Middle School), the PPS Office of Information Technology has administered a self-evaluation survey tool aimed at assessing the level of technology use and integration by school staff. Data gathered are used to drive site-based decision making, and plan for professional improvement.
- Use of the Technology Enhanced Student Assessment (TESA) system, which allows students to take Oregon Statewide Assessment Tests online.
- Use of ODE English Language Proficiency Assessment (ELPA) testing.
- The START pilot project and development of a data warehouse to improve access to student information.

Student and Community Linkages

Effective communication with all of the community's stakeholders (students, families, school board members, employers, and civic leaders) is necessary to meet the district's student achievement goals and support continuous improvement efforts. Technology resources to improve communication to students, families, and the community include:

- Improved web pages; the Content Management System will keep parents abreast of new developments and provide a place for their feedback.
- Greater access to e-mail for our community of learners, as well as for educators and parents.
- Online discussion areas with both bulletin board systems (for ongoing discussions) and chat areas (for real-time conversations).
- E-mail listservs for district and building groups.
- Parent Assist (eSIS) web portal to provide parents/guardians with access to information on student progress.

For the technology-supported education model to function effectively, academic standards and instructional objectives must be clear and rigorous, assessments must be linked to these standards and objectives, and schools must teach a curriculum that embeds the standards. Teachers must have resources to improve classroom instruction using technology and electronic communication tools must be in place to support professional learning communities among educators and better dialogue among all of the stakeholders in the community.

PPS INFORMATION TECHNOLOGY MISSION, VISION, AND ORGANIZATIONAL STRUCTURE

The framework illustrated on page 10 describes the standards-based system that the PPS Technology Plan is designed to create over the next five years, consistent with the PPS Strategic Plan (see pages 7-9). The following chart summarizes the PPS Office of Information Technology mission, vision, and values. The adopted mission is "to provide the most reliable and effective technology solutions and ongoing support in a cost-efficient manner to empower students, educators, and staff in achieving the district's mission."

To achieve this mission, it is essential we establish and embrace high expectations of ourselves as professional educators, and continue to find and develop innovative and effective ways of motivating and teaching students. Our current information-oriented society no longer provides us with the luxury of viewing technological competence as an optional skill, and any person involved in the education of students in PPS should be knowledgeable and skilled at using technology as a tool for instruction, learning, and management. Our values include teamwork, effective communication, customer service, leadership, creativity, professionalism, and integrity.

The attached chart also describes the key client outcomes that PPS Information Technology is working to achieve, the critical process and key initiatives that support those outcomes, and the performance measures the office uses to evaluate its operations.

An organizational chart for the PPS Office of Information Technology is attached on page 21. PPS Information Technology provides support for both administrative and academic computing. The PPS Office of Information Technology is supervised by a chief technology officer who reports directly to the PPS chief operations officer. Key staff within PPS Information Technology include managers for instructional technology, technical operations, business services, contract and compliance, and student services. These managers and the supervisor of publications technology report directly to the chief technology officer.

Information Technology Mission and Vision

Mission

The mission of the PPS Information Technology organization is to provide the most reliable and effective technology solutions and on-going support in a cost-efficient manner to empower students, educators, and staff in achieving the District's mission.

Vision

Support Student Achievement through provision of "Best In Class" IT Services

We will know we have achieved this when:

1.) Demonstrated through Benchmarked Performance.
2.) Others in the professional community seek us out.
3.) Clients pro-actively seek our services and are willing to pay for services.

Values

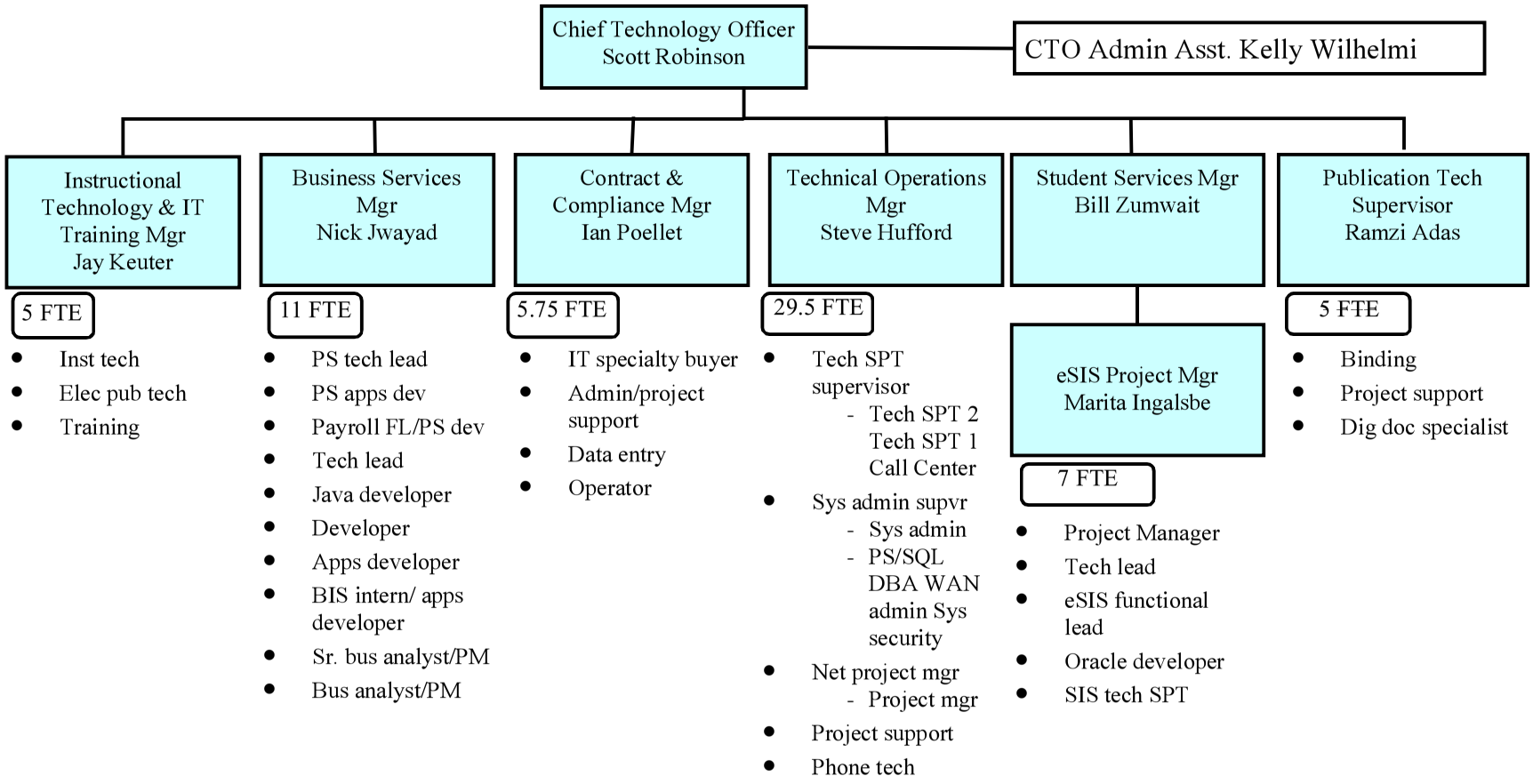
- **Teamwork** is fundamental to our success.
- Effective and wide-ranging **communication** enhances the development, acceptance, and use of technological solutions.
- Technology solutions that are simple, reliable, and responsive to client needs provide the best **customer service**.
- Active **leadership** in the technology field assists the District in meeting its objectives.
- Encouragement of **creativity** benefits each individual member of the PPS community and the District as a whole.
- **Professionalism and integrity** both improve our technological product and enhance the District's mission.

The ultimate measure of the success of our endeavors is in their effect on education.

	Reliability	**Accessibility**	**Suitability**	**Responsiveness**	**Value**
Key Client Outcomes	Our Customers demand **reliable** systems.	Our Customers demand ease and appropriateness of **access** to information and systems.	Our Customers demand the most **suitable** systems for their needs.	Our Customers demand high **responsiveness** for the services we provide.	Our Customers demand the best **value** for the services we provide.
Critical Processes	Pro-active Systems maintenance System Monitoring & Reporting Pro-active System Enhancements Maintenance of Standards Change Control Process	Flexible Secure Access to Systems Centralized Move, Add, Change User Policy Enabling User Access to data reporting and publishing	Systems & Alternatives Analysis Service Request Management Business Process Consultation Usability Testing Application Implementation Quality Assurance Process	Emergency Response Management Pro-Active Customer Notification Escalation Process	Business Case Justification Project Management Reporting Process & Performance reviews Benchmarking Effective Training
Key Initiatives	Security Management Plan Monitoring System Hardware Standardization Capacity Management Plan Desktop Replacement Cycle	Authentication Mgmt. Web Infrastructure / Portal Identity Management Enterprise System Projects (SPED, CUB, eSIS,) Data Warehouse SEMS Documents & Print Mgmt Time & Labor Workforce Management Wireless Management	Data Quality Service Request Process Instructional Technology Plan (Refresh) Project Lifecycle Management Application Standards Software Standards	Service Level Agreements Business Resumption Plan (Disaster Recovery) Tiered Escalation Process Trouble Ticket Management Quality Assurance	Standards Adoption Activity-Based Pricing Asset Tracking System Licensing & Compliance Master Contracting Best Practices/Knowledge Management
Performance Measures	Infrastructure Performance Statistics Network Performance System Availability.	Response time, license usage, conformance to accessibility standards. % of users accessing.	Customer Service Survey, Project Management Tracking, Change Review process.	Help Desk call tracking, Training statistics, Service Request tracking, Web surveys.	On budget % or $, total cost of ownership plan.

07/05

Information technology



Overview of PPS Information Technology Infrastructure

Infrastructure/Hardware Deployment – Data Network

Portland Public Schools operates more than 90 schools and the Blanchard Education Service Center (BESC) central administration building. All locations have been completely rewired, with fiber to the BESC and Cat 5 (and now Cat 6) copper cabling to the other sites. Every classroom has at least two data outlets and one phone outlet. Most offices have a data and a phone outlet. The data network consists of high-speed routers that connect the PPS Data Center at the BESC and ten high schools, and smaller routers at the middle and elementary schools. A combination of switches within each building is used to interconnect each classroom and office. Cisco/SMC series routers connecting the high schools were installed between 2002 and 2005 as a result of a bond measure approved by Portland voters in 1997.

All sites are connected by a fiber ring as part of IRNE/INET telecommunications efforts, and the current bandwidth configured on this network is 100 megabits. At each of the high schools the most heavily used network segments are currently connected to the routers with high-speed switches. The interconnection between router and switch is 100 megabits, and the switches provide 100 megabit connections to the desktop. Middle and elementary schools are connected to the district's network by 100 megabits. These schools are connected internally to the router at their location with 100 megabits. The Data Center is connected to IRNE/INET with district-owned fiber that runs from the Data Center to the Pittock Internet Exchange (a partner with PPS, the City of Portland, and Multnomah County in developing the IRNE/INET).

Infrastructure/Hardware Deployment – Voice Network

The PPS voice network includes a Cisco call manager system at the Data Center and Cisco routers at three high schools. All district classrooms have telephones but most do not have the capability to direct-dial outside the school without going through a school switchboard. These legacy PBX systems operate over traditional copper cables that are limited at each school. The legacy system does not support school-based voice mail services for most staff, but voice mail is available to central office personnel. Central office and support program voice mail services are provided via a voice mail system installed at the in the Data Center in 2002. This voice mail system also provides auto attendant features used at the BESC. PPS has started to implement a plan for transitioning the entire district to Voice over Internet Protocol (VOIP) technology by 2010.

Infrastructure/Hardware Deployment – Desktop Equipment

The district uses a mixture of Apple and PC-compatible computers. PCs account for approximately 75% of all computers in the district, including laptops and desktops. Many elementary school environments are primarily Apple, although some schools are migrating to PCs as new acquisitions and refresh opportunities arise. Our middle schools are mixed environments, but with the migration to a Novel-managed desktop solution our middle schools are about 80% PC. Most high schools use PCs, except for desktop publishing and multimedia instruction, where Macintosh computers are the tool of choice.

Infrastructure/Hardware Deployment – Operations Center

The PPS Data Center is housed at the BESC, where it shares space with Information Technology support units. The Data Center contains phone equipment, network equipment, and application servers. It is protected by air conditioning, fire-proofing, a battery-uninterruptible power supply, and a back-up generator. A monitoring system provides rapid notification of abnormal environmental conditions. The room housing the Data Center has a raised floor and combination-locked doors for limited secure access.

Infrastructure/Hardware Deployment – Servers

Our enterprise servers consist of Hewlett-Packard hardware and are located in the Data Center along with several web, file, print, and network management servers.

Application Deployment – Web Applications

The district maintains a central web server for use by all departments and staff. This web server contains the district's public Internet website maintained by personnel in several departments. We also have servers that house the Alpine Content Management System, which is currently leveraged by approximately 60 departments and schools to manage web-based content. Access to this web server is controlled through a Lightweight Directory Access Protocol (LDAP) or edirectory authentication process.

Application Deployment – E-mail

All district staff are provided with e-mail accounts. Novel Groupwise has been identified as the enterprise e-mail solution and about 70% of all district personnel are using Groupwise. Middle schools are undertaking a comprehensive managed desktop upgrade in 2005-2006 and PPS should add an additional 1,200 users to that e-mail platform.

Application Deployment – Student Information Systems

In 2002 the school board approved the purchase of a new student information system. The product purchased is called eSIS, from Administrative Assistants Ltd (AAL). It is browser-based and uses an Oracle database that resides on a Dell/Sun server farm at the Multnomah Education Service District (MESD), which also provides services to seven smaller school districts in Multnomah County. Oregon districts including Bend/LaPine, Beaverton, Eugene, and Hillsboro (along with several other ESDs) have joined PPS in a consortium formed to share support and costs wherever possible. All PPS schools have been using the system since 2003-04. We are planning to pilot the special education (SPED) module of eSIS in fall 2006, the Parent Assist module in spring 2006, and will continue to explore other resources presented by AAL.

Support/Maintenance Structure – Infrastructure Maintenance

The network infrastructure is monitored and maintained by the Information Technology Technical Operations group. The network combines leased and purchased components with vendor service agreements.

Support/Maintenance Structure – Desktop Operating System Support

PPS Information Technology includes staff members responsible for providing desktop operating system (OS) technical support. These staff work directly with both the computer systems and with school personnel to troubleshoot and solve problems.

Support/Maintenance Structure – Desktop Application Support

Desktop application support is first handled by school personnel and then by a PPS Call Center, with support from a variety of personnel in the Office of Information Technology.

Support/Maintenance Structure – Desktop Hardware Support

PPS maintains three-year warranty coverage on all computers to ensure that repair and replacement can occur on a timely basis. Technical support staff make only nominal repairs on older equipment.

Business Information Systems

The PPS Business Information Systems (BIS) group is responsible for the implementation and maintenance of the district's support service systems and proprietary application development initiatives. Key BIS applications are:

- *ATS*: Risk management application that manages property and casualty claims and history.
- *Budget Build*: Proprietary forecasting and budget-building application.
- *Discipline*: Suite of portal-hosted applications designed to extract and present certain discipline-related information from the district's student information system (eSIS).
- *Edulog*: The primary transportation routing management system.
- *GetFacilities*: Web-based work order system for facilities management operations, maintenance processes, and reporting.
- *Portal*: This is a district-wide initiative to deliver relevant and meaningful content from multiple applications to a single web page based on individual user preferences.
- *PeopleSoft Financials*: Primary Enterprise Resource Planning (ERP) system for financial management including General Ledger, Accounts Payable, Accounts Receivable, Billing, Purchasing and Inventory management.
- *PeopleSoft Human Capital Management*: The district's ERP system for Human Resources and staffing management, including Payroll, Recruiting, Benefits and Time and Labor processing.
- *Reserve*: Web-based Civic Use of Buildings reservation system.
- *School Choice:* Online school lottery application allowing district families to apply to have their children attend a non-neighborhood school.
- *SEMS*: Web-based substitute management system for licensed general and special education staff as well as building secretaries.
- *Webevent*: Web-based calendaring solution that provides information at the individual school and district levels via the Internet.
- *WinSNAPP*: This is the primary nutrition system that manages inventory/purchasing and point-of-sale information.

PPS Needs, Priorities, and BIS Applications

- Moving to take advantage of mature Enterprise Resource Planning systems (i.e., employee self-service, online time and labor, and eventually electronic procurement/supply chain management).
- Moving to a decentralized content management model that provides a graphic user interface (GUI) for managing, updating and editing content within district-provided templates/boilerplates.
- Moving to portal technologies to deliver data-driven decision making tools and applications by leveraging data warehouse technologies for all users based on role (i.e., building and central administration, teacher, student, parent, community member). A Customer Relationship Management (CRM) functionality will improve the delivery of relevant content to both internal and external users. Redesign of the district website in the areas of wire-frame/site-map and look, feel and navigation perspectives. Electronic commerce services may also replace legacy eCommerce processes when appropriate.
- Moving to standards for vendor-supported application selection versus proprietary application development; business requirements gathering and analysis; project lifecycle methodologies and ongoing support and maintenance.
- Moving to streamline legacy business processes and technologies when possible.

Vendor-Supported Applications

The following BIS applications are hosted by the PPS Data Center, but are supported, maintained, enhanced and updated by a vendor: Pinnacle, ATS, WinSNAPP, Reserve, GetFacilities, SEMS, Edulog, Alpine Content Management, Search Soft.

Internal Application Status and Overview

- *PeopleSoft:* Upgraded from 7.5 to 8.8 in December 2003 and November 2004 for Human Capital Management (HCM) and Financials, respectively; an upgrade to HCM/eRecruit 8.9 is scheduled for spring 2006; maintain regular change control for system maintenance/service packs; a Workforce Management Initiative (Position Control and eRecruit) is scheduled for spring/fall 2006; Time and Labor implementation scheduled for summer 2006; considering eProcurement for 2007-2008.
- *Oracle Portal*: Administration Beta test was conducted in December 2005 and roll out for administrators is scheduled for fall 2006; portal environments for central administrators, teachers, parents and student will follow on an annual basis. Data warehouse integration is scheduled for fall 2006.
- *Web Redesign*: The wire frame/site map and look/feel/navigational analysis was completed in fall 2005. Branding and implementation is being driven by the PPS Communications Department (likely spring/summer 2006 roll out).
- *SEMS*: Full upgrade implementation of web client deployed to Human Resources was completed in fall 2004; roll-out to secretaries was completed in spring 2005. Roll out for special education is scheduled for spring 2006.
- *GetFacilities/Reserve*: GetFacilities web client was deployed in summer 2005 and roll out was scheduled for 2006.

Staff Development – Title IID (Ed Tech) Implementation Plan

The district received Title IID formula funds for the 2002-2005 school years. These funds were allocated to support ongoing, sustained, intensive, and high-quality professional development for teachers, administrators, and non-licensed personnel around technology integration into teaching and learning. Title IID formula funds primarily support a half-time (.5 FTE) instructional technology specialist responsible for planning and conducting workshops and supporting innovative technology programs such as the Laptops for Teachers and Laptops for TOSAs programs. Additional resources were allocated to fund technologies including online learning resources, hardware, and software. The hardware purchased include a mobile training computer lab and multi-media labs for district-wide check out.

PPS Learning Campus – Learning Management System

The PPS Learning Campus is an enterprise Learning Management System (LMS) that provides the district with the ability to manage, deliver, and track training participation in online or traditional instructor-led courses. This system addresses the challenges associated with training a large and widely dispersed workforce. An online system of courses and testing enables staff to learn at their own pace on selected technology applications. The PPS Learning Campus facilitates management of professional development through features such as online course catalogs and new training announcements, registration, testing, training history logs, evaluation survey forms and course completion certificates, and access to Quick Reference Guides for custom PPS courses.

Document Management System

PPS has implemented a document management solution in an effort to: address issues related to security, reduce risk of loss, increase accessibility, and reduce access time. The Document Management System (DMS) is a combination of hardware and software that allows for the creation of a electronic version of each document, stored on hardware in the central office and backed up on a nightly basis for disaster recovery in case of damage. The flexibility inherent to this solution supports document scanning, storage, archiving, searching, and retrieval online and on-demand. Access is managed via identification of staff roles and job function, with the capacity to manage data down to the individual document level.

Equity and Access Guidelines

Portland Public Schools is committed to providing equitable and just access to information technology to all students, families, staff, and community members. Accessibility must be considered when procuring, developing, or implementing information technologies, including web-based information and applications, hardware, software, multimedia, and when designing the environment. District approaches and guidelines for ensuring accessible information technology are described in Appendix E.

PPS Internet Safety Policies and the Children's Internet Protection Act (CIPA)

The Children's Internet Protection Act (CIPA), enacted December 21, 2000, requires recipients of federal technology funds to comply with certain Internet filtering and policy requirements. Schools and libraries receiving funds for Internet access and/or internal connection services must also meet the Internet safety policies of the Neighborhood Children's Internet Protection Act (NCIPA) that addresses the broader issues of electronic messaging, disclosure of personal information of minors, and unlawful online activities.

It is the policy of Portland Public Schools to: (a) prevent user access over its computer network to, or transmission of, inappropriate material via Internet, electronic mail, or other forms of direct electronic communications; (b) prevent unauthorized access and other unlawful online activity; (c) prevent unauthorized online disclosure, use, or dissemination of personal identification information of minors; and (d) comply with the Children's Internet Protection Act [Pub. L. No. 106-554 and 47 USC 254(h)]. Appendix E provides definitions of CIPA terms and describes the PPS Internet Safety Resources and Support Plan. Representatives from Information Technology, Student Services, Security Services, and the Professional Library have been working since November 2005 to craft a plan and develop resources to educate the community and provide relevant teaching materials and resources on Internet safety, privacy and the Internet, cyber relationships, intellectual property, malicious code, cyber citizenship, social issues, pornography on the web, cyber harassment, and other relevant topics. Appendix E provides descriptions of the mechanisms in place to protect the online experiences of students, including copies of the draft Acceptable Use Policy for District Computer Systems documents that are distributed in school registration packets. These documents are slated for review and updating in summer 2006.

Analysis of the Current Environment for Technology in PPS

Along with other school districts in the region, Portland Public Schools faces a number of challenges in implementing its technology initiatives. Some of the major factors affecting these initiatives are described below:

Nature of Technology

Technology initiatives are typically expensive and often have short life spans. It is not unusual for a new technology to become outdated soon after it is implemented. In some cases, newer versions replace a technology as it is being implemented. The ever-changing and evolving nature of current technology is a positive factor because it offers new learning and information management opportunities. It is also a negative factor, however, because it increases costs.

Available Funds

Like other school districts in and around the metropolitan area, Portland Public Schools does not have sufficient funds to address all of its needs. Technology is one among many competing demands on available district funds, including salary equity, increased facilities costs, and priorities for program expansion and innovation. Over the past few years reductions in the number of librarians and media specialists in the schools have encouraged the district to look to information technology for solutions which entail additional costs. Effective professional development on technology integration requires time to compensate teachers and other staff. PPS will face significant budget reductions in 2006-07 which will further tax our infrastructure and technology base. The lack of adequate funding is major challenge in implementing technology. Projected enrollment declines will result in financial pressures for the duration of the PPS Technology Plan unless substantial changes are made in the existing funding model.

Federal e-Rate and Ed Tech (Title IID) Funding

Infrastructure upgrades supported by the federal e-Rate program as well as the professional development and training initiatives supported by Ed Tech funding from the Oregon Department of Education have been a positive influence on technology implementation in PPS. Although the future of funding for these programs is cloudy, they provide technology and professional development resources which are essential in helping PPS meet the needs of our 21st century schools and classrooms. There would be a negative impact should these funding sources be reduced or eliminated altogether.

Staff Salaries and Retention

Salaries for PPS Information Technology staff have not been competitive in the past, a factor that has a potential negative impact on the district's technology initiatives. The contrast between public and private sector salary packages makes it attractive for key developers and support personnel to leave PPS, and as the economy continues to rebound, we may face a more competitive market for coveted skill sets. Other factors to consider in attracting and retaining qualified staff are opportunities for ongoing professional growth and training, and to work with more current technology.

Location

The district's geographic location is both a positive and a negative factor. Close proximity to Portland State University and other colleges/universities provides access to a pool of motivated graduates and job seekers who have needed technology skills and experience. However, the growing number of leading-edge technology companies and employers in the Portland metropolitan area also creates a more competitive hiring environment.

Central Office Review for Results and Equity (CORRE)

CORRE is a five-step process designed by the Annenberg Institute for School Reform to help school districts determine the current state of student results, assess the effectiveness of district policies and practices that deal with those results, and develop action steps that strengthen their capacity for supporting schools. The process also helps central office leadership collaborate to improve district-wide policies and practices that support high academic achievement for all students. CORRE was initiated in May 2003 in partnership with the Portland Schools Foundation. Initial results were shared with the new PPS superintendent in fall 2004, and the findings and recommendations were published and presented to the PPS Board of Education in January 2005. One of the five primary recommendations is to "make collecting, organization, and acting on data a priority." CORRE has been a positive influence by encouraging development of a PPS data warehouse to support effective knowledge management and data-driven decision making.

New Administrative Initiatives

The arrival of the district's new superintendent in 2004-2005 has been a positive factor for technology use in PPS, by providing strong leadership in realigning central services, implementing data-based decision making, increasing accountability, and initiating instructional improvements that set high new expectations regarding technological applications and integration.

ISTE Technology Support Index

The Technology Support Index (TSI) is a framework developed by ISTE to assist schools and districts in assessing their technology support programs and to provide solutions based on their unique profiles in four domains: equipment standards, staffing and processes, professional development, and intelligent systems. A copy of the TSI Technology Profile and Action Plan for Improvement that PPS obtained by completing the online assessment is included in Appendix F. The district's overall system was rated "satisfactorily efficient," requiring limited improvements. The TSI also identifies the cost implications associated with recommended improvements. The TSI is not intended to be a comprehensive or comparative program evaluation, but rather to serve as a benchmark against which every district can assess and track its own progress. It also serves as a starting place for understanding effective technology support systems and how particular strategies can work together effectively to improve teaching and learning. The TSI is based on research from a pilot project conducted in ten districts in Washington state. With this initial research and web tool development, ISTE is gathering feedback from school districts around the world about the usability and usefulness of the TSI.

Information Technology Goals and Strategies 2006-2011

Narrative Description

The overriding goal for instructional technology in Portland Public Schools is to prepare all students and staff to become technologically literate and proficient, as measured by their understanding of and ability to use technology to communicate and collaborate; to demonstrate new ideas, knowledge, and skills by producing high-quality products; and to conduct research, make decisions, and solve problems. The following goals and strategies are aligned with the five major work areas described in the PPS 2005-2010 Strategic Plan: (1) Excellence in teaching and learning; (2) Leadership for results; (3) Strong partnerships with families and community; (4) Excellence in operations and services; and (5) Cultivating a continuous learning ethic among students and staff in every school and central office. These goals and strategies are designed to meet the National Educational Technology Standards (NETS), Oregon's Technology Common Curriculum Goals, and the district's recommended Student Education Technology Standards, Teacher Education Technology Guidelines, and Administrator Education Technology Guidelines (see Appendix A). An Action Plan on page 40 provides a five-year timeline for implementation of the following goals and strategies.

1. Excellence in Teaching and Learning

Goal 1.1 Enhance access to and use of student information systems which facilitate instructional improvement (e.g., Career Information System, Certificates of Initial and Advanced Mastery, Education Plan and Profile, data warehouse).

1.1a Implement a web-based interface for viewing student attendance, achievement, and graduation information and progress. The current solution is eSIS as a tool for delivering student information to PPS stakeholders. During the term of this plan PPS will implement additional modules of the eSIS information system.

1.1b Implement a district-wide electronic grade book solution. Beginning in fall 2006 PPS will seek to pilot the eSIS Gradebook and Parent Assist modules at targeted high schools. The district is also exploring electronic grade book alternatives that provide standards-based assessment functionality, but until a formal decision has been made, PPS Information Technology (IT) will look to the eSIS resource to support non-standards-based environments.

1.1c Continue to develop and enhance professional development opportunities for PPS staff on key student systems. As PPS implements eSIS Special Education (SPED), Parent Assist, and Gradebook, a data warehouse, and other systems, IT will continue to help staff acquire needed technical skills and knowledge, through elearning, asynchronous video, and web-based guides, as well as through typical instructor-led training opportunities.

1.1d Collaborate with all NCLB title programs to develop and implement a support plan for students in high-poverty or high-needs schools, or those schools identified for improvement or corrective action under section 1116 of Title I. IT will continue to meet regularly with leadership teams from other title programs to develop and implement strategies that enhance the quality of technology-mediated education for the identified population.

Goal 1.2 Support the district's instructional focus and school improvement planning by improving data integration and access to combined data (data warehousing).

1.2a Expand data warehouse solution to additional instructional stakeholders. As state and federal governments increase reporting requirements, and as more teachers and administrators demand and use data for educational decisions, it is imperative for PPS to implement a comprehensive data warehouse. Phase I of the data warehouse is slated for roll out to building principals in summer 2006, with transparency into academic, attendance, and discipline data. Phase II will provide targeted instructional staff with similar data and information pertinent to the students enrolled in their respective classes.

1.2b Develop and integrate data warehouse tools for insertion into the PPS portal. Dashboard tools would be delivered to the PPS portal environment, enabling customized configuration of portal elements.

1.2c Continue to implement a data dashboard among additional stakeholder audiences. Anticipated growth in the quantity and diversity of information housed in the data warehouse will provide additional stakeholders with access to decision-making resources previously unavailable or too cumbersome to use.

Goal 1.3 Provide students and teachers with expanded access to appropriate technology tools which support curriculum and instruction (e.g., TESA, ELPA, computer labs, curricular software and resources).

1.3a Collaborate with the PPS Office of Teaching and Learning to plan and implement an instructional management system. PPS has developed numerous exemplary instructional resources which are difficult for teachers and administrators to access easily because of awkward formats or confusing web links. The development and deployment of an instructional management system will facilitate the process of placing these and other innovations under one "roof" and then opening access to users across the district. Through an intuitive interface, teachers will be able to obtain on-demand training, teaching strategies, field-tested lessons, and research aligned to standards. They will thus be able to address varying student needs and interests much more quickly and effectively.

1.3b Continue IT refresh initiative. The Oregon Quality Education Model (QEM) recommends a 6:1 student-to-computer ratio, with a replacement cycle of five years. In 2005-06 the superintendent and school board allocated funds to begin a computer refresh program to ensure that PPS computing needs are maintained at an appropriate level. We are seeing an increase in web-based assessment tools, digital curriculum, and technology-mediated delivery of resources.

1.3c Collaborate with the Office of Teaching and Learning (OTL) to implement a software review process. The creation of a software review/adoption policy will provide educators with a systematic method for assessing the value and utility of commercial software that is aligned with state and district curriculum standards and supports teaching and learning. We believe that for software to be an effective tool, it must provide information and learning opportunities to students and teachers in a clear and concise manner.

1.3d Develop and implement a library management system. The current system is over ten years old and does not meet staff instructional and management needs. IT has been actively involved in defining technical requirements for a library management system and has worked closely with the PPS Professional Library leadership team to plan this upgrade.

1.3e Provide PPS staff with access to innovative technology tools and resources. As funding opportunities arise, PPS will make strategic investments in innovative technology tools and collaborate with instructional staff to assess the effectiveness of our teaching and learning environments. Multimedia tools, wireless technology, presentation technologies, and web-based applications are currently providing teachers with new and creative resources to support and deliver instruction.

Goal 1.4 Develop systems to support integration of technology into the PK-12 curriculum, including systems for accessing, evaluating, and creating information to improve student achievement.

1.4a Align standards-based technology integration instructional models and practices with state academic standards. PPS will provide ongoing staff development workshops for technology curriculum integration that are aligned to district technology standards, state technology curriculum goals, and NETS. (This dovetails with 1.4b and 1.4c and with existing professional development efforts.)

1.4b Provide staff professional development on basic and advanced uses of productivity applications. Licensed instructional staff as well as essential support staff need access to and training with

technology resources as a tool for helping students and improving productivity. As staff become competent and confident users of technology they will further enhance the quality of our instructional environments. Providing all staff with access to web-based learning opportunities, instructor-led sessions, as well as an online knowledge base will be a priority for PPS.

1.4c Provide ongoing and sustained professional development on how to use technology to meet state content standards. (Also see 1.4a and district's recommended technology standards and proficiencies.) IT will collaborate with OTL and the PPS Professional Development Academy (PDA) to provide opportunities for PPS staff to acquire knowledge and develop strategies for effective integration of technology across all content areas.

Goal 1.5 Adopt and implement meaningful standards to measure the progress of teachers, administrators, and students in obtaining needed technology skills.

1.5a Adopt and implement PPS Student Education Technology Standards. The district's recommended standards are aligned directly to the Oregon Technology Common Curriculum Goals and the National Education Technology Standards (NETS). Both K-12 and higher education representatives helped develop the NETS. Staff professional development on how to meet these standards is essential and will be ongoing.

1.5b Adopt and implement PPS Teacher Education Technology Guidelines. Implement a comprehensive program in support of these standards/guidelines, which are aligned directly with the Oregon Technology Common Curriculum Goals as well as the NETS for Teachers.

1.5c Adopt and implement PPS Administrator Education Technology Guidelines. These guidelines describe the knowledge and skills constituting the "core" of what every administrator needs to know about and be able to do with technology regardless of specific job role. They align directly with the NETS for Administrators developed through the Technology Standards for School Administrators (TSSA) Collaborative. An underlying assumption is that administrators should be competent users of information and technology tools common to information-age professionals.

2. Excellence in Operations and Services

Goal 2.1 Maintain a high-reliability IT environment for users.

2.1a Commit resources to ensure 99% reliability for IT environment. An ongoing commitment on multiple fronts will be essential for PPS to achieve this standard. Maintaining the integrity of the PPS Data Center is paramount, involving management of environmental conditions and ensuring 100% power availability. Continued investment is also essential to ensure redundancy in key systems: servers, switches, power supplies, and routers, as well as Internet service access. PPS is committed to continued investment in top-tier network monitoring tools as well as adequate support staff to respond to network outages and emergencies.

Goal 2.2 Exceed availability, service level, and satisfaction targets.

2.2a Update all service level agreements (SLAs). The PPS Office of Information Technology is committed to providing best-in-class support for schools, toward the goal of improved academic achievement for all students. IT provides a myriad of management and instructional services and resources. These are managed through SLAs that detail core activities, metrics, and consequences for low performance. To meet evolving school and district needs, these SLAs need to reflect the current functional and technical status.

2.2b Meet or exceed service level agreements for all systems and processes. IT-supported services will be monitored and measured according to the agreed-on SLA compliance criteria. Needed corrective actions will be based on mutually agreed-on service-level thresholds.

2.2c Develop and deliver IT customer satisfaction surveys and use the responses to improve service quality. PPS instructional and technical environments are constantly evolving, and IT must be able to respond to the ever-changing needs of end users. A satisfaction survey will provide another lens for viewing environmental conditions and making mid-course adjustments as needed.

Goal 2.3 Provide leadership for technology-supported business process improvement efforts in the district, resulting in projects which are completed on time, within budget, and according to targeted outcomes (e.g., workforce management, eSIS SPED, time and labor, CIM/CAM, data warehouse).

2.3a Strengthen IT governance, decision-making, and accountability model by reinforcing links with PPS core business objectives. The IT governance structure is designed to enable the district as a whole to make more informed technology-related decisions, as

well as to monitor and measure the impact of these decisions on key strategic goals and activities.

Goal 2.4 Continue to focus on reducing the cycle time for key processes.

2.4a Identify "first call resolution" benchmarks and establish IT improvement goals. Industry standards and best practices point to first call resolution as the single most important challenge in improving customer satisfaction with call centers. The absence of first call resolution has been found to account for a disproportionate percentage of a call center's operational costs.

2.4b Improve IT order-to-receipt time. The IT hardware and software ordering process will evolve and mature as part of ongoing efforts to maximize efficiencies. Changes will include streamlining internal processes, improving vendor order-to-receipt time, and educating end users on business process and purchasing policies.

3. Strong Partnerships with Family and Community

Goal 3.1 Engage the community and families through technology-enabled communication tools (e.g., eSIS Parent Assist, web portal). Partnerships among educators, parents, and the community are essential in creating thriving school communities and higher student achievement. PPS will continue to explore and implement technology to support family and community partnerships.

3.1a Implement eSIS Parent Assist. Continue implementation of eSIS modules, including Parent Assist. This web-based tool provides parents with access to student academic, attendance, discipline, and demographic data. The academic data are dependent on use of an electronic grade book program like that embedded in the Teacher Assist module of eSIS.

3.1b Expand and support site-based content management and web-based communication resources. Innovative technologies can enhance communication and collaboration among teachers, parents, and students. Teachers and administrators increasingly rely on the web to deliver information and build bridges to families and the wider school community. Parents are becoming increasingly technologically savvy and strong advocates of technology-supported communication and collaboration.

3.1c Collaborate with PPS programs and the appropriate community partners involved in delivering adult literacy services. IT will work with the PPS English as a Second Language/Bilingual Program and other school-based and district-wide programs to ensure that the Technology Plan is aligned with efforts focused on adult literacy, as appropriate (e.g., school family nights focused on literacy, before/after school programs offered as part of the Schools Uniting Neighborhoods initiative).

Goal 3.2 Leverage business and other partners for a joint IT investment which benefits the entire community (data network, wireless networks, data center).

3.2a Develop and manage the IRNE county-wide collaborative. IRNE is a telecommunications network designed to carry all voice, video, and data communications traffic for the City of Portland and its strategic IRNE partners, including PPS. IRNE allows PPS and other entities (e.g., regional transportation and public safety agencies) to leverage funds, expertise, and infrastructure into a broadband, integrated regional and statewide network. This ongoing partnership helps address access and equity issues.

3.2b Collaborate on development of a city-wide wireless service. The Unwire Portland project is a multi-agency collaboration focused on creating a wireless network "cloud" over the city of Portland. This innovative public-private partnership involving three core public partners – the City of Portland, PPS, and TriMet – will be seeking a private owner to install and manage the network. The wireless service will greatly expand access to online resources and tools.

4. Leadership for Results

Goal 4.1 Support data-driven district norms and culture by improving information access (data warehouse).

4.1a Develop a comprehensive professional development program to support data warehouse end users. (Also see 1.2a.) Provide a variety of professional development and knowledge acquisition resources to support implementation of a data warehouse. Teachers and administrators are increasingly being called upon to use data for educational decision making. IT will ensure that they understand and are able to use the appropriate technology tools to support instructional decisions.

Goal 4.2 Provide leadership in the use of technology to support district objectives, instructional improvement, and operational efficiency.

4.2a Develop a technology asset management plan and gather baseline data from all sites. Development and implementation of an asset management plan builds on the progress made to date in PPS regarding the strategic purchase and management of all IT resources. The purpose of an asset management plan is to direct capital and property resources where there are the greatest needs and potential benefits.

4.2b Generate a gap analysis for all sites by correlating data collected from the asset management plan with the most current PPS Model

Schools Framework (see Appendix D). IT is committed to evaluating the impact of educational technology on teaching and learning. Central to this philosophy is the need to gather data to inform and prioritize technology acquisition and support. In alignment with 1.5a, 1.5b, and 1.5c, developmentally appropriate technology skill assessments will provide PPS with baseline and formative data to support site-based as well as district-wide decision making.

4.2c Develop support tools to aid in site-based school improvement and technology planning. These tools will help schools address gap analysis data, develop improvement strategies, and access implementation resources. Each school's plan for improving its core technology capacity should address assessment data and identified priorities. Together, the ISTE Technology Support Index (Appendix F) and the district's School Technology Planning Guide (Appendix C) will support local efforts. PPS has also started to assemble technology integration resources. The PPS Education Technology Standards Toolkit (Appendix B) provides a framework for organizing and distributing supplemental technology integration resources to all staff.

4.2d Update Acceptable Use Policies (AUP). Given the rapid evolution of the Internet and corresponding resources available to staff and students, an updated AUP is essential. The purposes of such policies are to educate; protect against violations of privacy; prevent misuse of PPS resources; protect against inappropriate or destructive behaviors which occur as a result of access to electronic information resources; and ensure that technology resources provided through PPS are dedicated to improving student achievement and school administration. (See Appendix E.)

4.2e Update and implement PPS Internet Safety Policy. In alignment with goal 2.2d, PPS will develop, implement, and continue to evolve an Internet Safety Policy. The policy will include a comprehensive education and awareness effort that seeks to prepare every teacher and student to be educated and informed information consumers. (See Appendix E.)

5. Continuous Learning Ethic

Goal 5.1 Increase access to online resources for achieving any time/anywhere learning (i.e., learning management system enhancement).

5.1a Collaborate with the PPS Professional Development Academy to expand the scope of online education resources available to instructional staff. Current online education offerings primarily support the roll out and maintenance of IT systems and applications. In expanding the scope and application of elearning, IT will leverage this delivery model to provide effective professional development that will help teachers improve their content knowledge and instructional practices.

5.1b Increase the number of staff participating in IT-sponsored training. Ongoing, job-embedded, and sustained staff training is an essential component of a high-performing organization. Ongoing professional development also helps attract and retain a knowledgeable and skilled workforce. The PPS Portland Learning Campus is an effective online system for managing professional development across a large school district. It includes robust reporting tools for gathering information about users of the system.

5.1c Increase the number of course options available to PPS staff on the Portland Learning Campus. In alignment with 5.1a and 5.1 b, IT will continue to develop a diverse menu of resources and training options. This differentiated elearning model will serve all staff in varying job roles.

Goal 5.2 Enhance staff skills through expanded cross-training opportunities.

5.2a Provide online courses and cross-training opportunities to support IT jobs and systems. Provide opportunities for IT support staff to acquire technical skills and knowledge to support various IT system roles and responsibilities.

5.2b Provide opportunities for IT staff to apply the skills and knowledge they have gained through professional development and training. As IT administrative staff acquire new skills sets, they will have opportunities to apply them under the direction of the primary support staff for various systems. Cross-training is a flexible professional development model that enables PPS to work to "grow our own" talent and develop embedded leaders and system administrators.

PPS Information Technology Goals and Strategies: Five-Year Timeline (2006-2011)

1. Excellence in Teaching and Learning							
1.1 Enhance access to and use of student information systems which facilitate instructional improvement (e.g., CIS, CIM/CAM, data warehouse).							
Goal	Activity	Year 1 2006-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
1.1a	Implement a web-based interface for viewing student attendance, achievement, and graduation information and progress.		X	X			IT, OTL, OSE
1.1b	Implement a district-wide electronic grade book solution.	X	X	X			IT, OTL
1.1c	Continue to develop and enhance training opportunities for PPS on key student systems.	X	X	X	X	X	IT
1.1d	Collaborate with all NCLB title programs to develop and implement a support plan for students in high-poverty or high-needs schools, or those schools identified for improvement or corrective action under section 1116 of Title I.	X	X	X	X	X	IT

1. Excellence in Teaching and Learning							
1.2 Support the district's instructional focus and school improvement planning by improving data integration and access to combined data (data warehousing).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
1.2a	Expand data warehouse solution to additional instructional stakeholders.		X	X	X		IT, OTL, OSE
1.2b	Develop and integrate data warehouse tools for insertion into PPS portal.	X	X	X	X	X	IT
1.2c	Continue implementation of data dashboard among additional stakeholder audiences.	X	X	X			IT, OTL, OSL

Responsibility Level key: IT-Information Technology, OTL-Office of Teaching and Learning, PDA-Professional Development Academy, OSE-Office of Secondary Education, OSL-Office of School Leadership

PPS Information Technology Goals and Strategies: Five-Year Timeline (2006-2011)

1. Excellence in Teaching and Learning							
1.3 Provide students and teachers with expanded access to appropriate technology tools which support instructional outcomes (TESA, ELPA, computer labs, curricular software).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
1.3a	Plan and implement an instructional management system.	X	X	X	X		IT, OTL
1.3b	Continue IT refresh initiative.	X	X	X	X	X	IT
1.3c	Implement a software review process.	X	X				IT, OTL
1.3d	Develop and implement a library management system.	X	X	X			IT, OTL
1.3e	Provide access to innovative technology tools.	X	X	X	X	X	IT

1. Excellence in Teaching and Learning							
1.4 Develop systems to support the integration of technology into the PK-12 curriculum, including systems for accessing, evaluating, and creating information to improve student achievement.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
1.4a	Align instructional models and practices with state academic standards.	X	X	X	X	X	IT
1.4b	Provide professional development on basic and advanced uses of application software.	X	X	X	X	X	IT
1.4c	Provide ongoing and sustained staff development on how to use technology to meet state content standards.	X	X	X	X	X	IT, OTL

Responsibility Level key: IT-Information Technology, OTL-Office of Teaching and Learning, PDA-Professional Development Academy, OSE-Office of Secondary Education, OSL-Office of School Leadership

PPS Information Technology Goals and Strategies: Five-Year Timeline (2006-2011)

1. Excellence in Teaching and Learning							
1.5 Adopt and implement meaningful standards to measure the progress of teachers, administrators, and students in obtaining needed technology skills.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
1.5a	Adopt and implement PPS Student Education Technology Standards.	X					IT
1.5b	Adopt and implement PPS Teacher Education Technology Guidelines.	X					IT
1.5c	Adopt and implement PPS Administrator Education Technology Guidelines.	X					IT, OSL

2. Excellence in Operations and Services							
2.1 Maintain a high-reliability IT environment for users.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
2.1a	Commit resources to ensure 99% reliability for IT environment.	X	X	X	X	X	IT

2. Excellence in Operations and Services							
2.2 Exceed availability, service level, and satisfaction targets.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
2.2a	Update all service level agreements (SLAs).	X	X	X			IT
2.2b	Meet or exceed SLAs for all systems, processes.	X	X	X	X	X	IT
2.2c	Develop and deliver customer satisfaction surveys and report out on quality of services.	X	X	X	X	X	IT

Responsibility Level key: IT-Information Technology, OTL-Office of Teaching and Learning, PDA-Professional Development Academy, OSE-Office of Secondary Education, OSL-Office of School Leadership

PPS Information Technology Goals and Strategies: Five-Year Timeline (2006-2011)

2. Excellence in Operations and Services							
2.3 Provide leadership for technology-supported business process improvement efforts, resulting in projects which are on time, within budget, and according to targeted outcomes (e.g., workforce management, eSIS Special Education, time and labor, CIM/CAM, data warehouse).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
2.3a	Strengthen IT governance, decision-making, and accountability model.	X	X	X			IT

2. Excellence in Operations and Services.							
2.4 Continued focus on reducing cycle time for key processes.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
2.4a	Identify first call resolution benchmarks and establish IT improvement goals.	X					IT
2.4b	Improve IT order-to-receipt time.	X					IT

3. Strong Partnerships with Family and Community							
3.1 Engage the community and families through technology-enabled communication tools (eSIS Parent Assist, web portal).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
3.1a	Implement eSIS Parent Assist module.	X	X				IT
3.1b	Expand and support site-based content management and web-based communication resources.	X	X	X	X	X	IT
3.1c	Collaborate as appropriate with district and community programs to support adult literacy services.	X	X	X	X	X	IT, OTL, PDA

Responsibility Level key: IT-Information Technology, OTL-Office of Teaching and Learning, PDA-Professional Development Academy, OSE-Office of Secondary Education, OSL-Office of School Leadership

PPS Information Technology Goals and Strategies: Five-Year Timeline (2006-2011)

3. Strong Partnerships with Families and Community							
3.2 Leverage business and community partners for a joint IT investment which benefits the entire community (data network, wireless networks, data center).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
3.2a	Develop and manage the IRNE county-wide telecommunications network.	X	X	X	X		IT
3.2b	Collaborate to develop a city-wide wireless service with the City of Portland.	X	X				IT

4. Leadership for Results							
4.1 Support data-driven district norms and culture by improving information access (data warehouse).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
4.1a	Develop comprehensive professional development program to support data warehouse end users.	X	X	X			IT, OSL

4. Leadership for Results							
4.2 Provide leadership in the use of technology to support district objectives, instructional improvement and operational efficiency.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
4.2a	Develop technology asset management plan and gather baseline data.	X					IT
4.2b	Generate a gap analysis for all sites.	X	X				IT
4.2c	Develop support tools to aid in site-based school improvement and technology planning.	X	X				IT
4.2d	Update Acceptable Use Policies.	X					IT
4.2e	Update, implement PPS Internet Safety Policy.	X	X	X	X		IT

Responsibility Level key: IT-Information Technology, OTL-Office of Teaching and Learning, PDA-Professional Development Academy, OSE-Office of Secondary Education, OSL-Office of School Leadership

PPS Information Technology Goals and Strategies: Five-Year Timeline (2006-2011)

5. Continuous Learning Ethic							
5.1 Increase access to online resources for achieving anytime/anywhere learning (i.e., learning management system enhancement).							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
5.1a	Expand the scope of online education resources for all staff.	X	X	X	X	X	IT, PDA
5.1b	Increase the number of staff participating in IT-sponsored training.	X	X	X			IT, PDA, OSL
5.1c	Increase the number of course options available to PPS staff on the Portland Learning Campus.	X	X	X			IT, PDA

5. Continuous Learning Ethic							
5.2 Enhance staff skills through expanded cross-training opportunities.							
Goal	Activity	Year 1 06-07	Year 2 07-08	Year 3 08-09	Year 4 09-10	Year 5 10-11	Responsibility Level
5.2a	Provide online courses and cross-training opportunities to support IT jobs and systems.	X	X	X			IT
5.2b	Provide opportunities for IT staff to apply skills and knowledge they have gained through professional development.	X	X	X			IT

Responsibility Level key: IT-Information Technology, OTL-Office of Teaching and Learning, PDA-Professional Development Academy, OSE-Office of Secondary Education, OSL-Office of School Leadership

Budget Strategies to Acquire and Maintain Components of the PPS Technology Plan

Portland Public Schools is committed to securing a long-term funding solution that will provide students, teachers, and administrators with the technology needed to support high-quality, standards-based learning and to accelerate student achievement. As we move forward in strategizing technology acquisitions and deployments, the current financial uncertainties have numerous implications. Acquisition of needed technology involves more than the initial purchase price: we must also factor in infrastructure implications, ongoing support, and projected upgrade strategies. Ongoing, sustained, and job-embedded professional development is critically important, and appropriate resources need to be dedicated to the use of equipment and software. The No Child Left Behind Act and corresponding federal and state accountability requirements continue to stretch our limited technology resources. Equity is another issue that has carried through from the previous technology plan.

Our challenge is to prepare all of our students for life and learning in the 21st century. It is therefore imperative that staff and students have access to the resources that will enable them to acquire the knowledge and skills that research and experience have shown us are necessary for post-secondary success and responsible citizenship. Because of funding issues at the local and state levels, PPS faces an uphill climb in providing needed technology resources. Effective coordination, leadership, and communication among all of the stakeholders at the school, district, and community levels will help address this challenge.

Universal Service Fund (e-Rate)

The Telecommunications Act of 1996 requires the Federal Communications Commission (FCC) and the states to ensure that affordable and high-quality telecommunications services are available to all Americans. Consistent with the congressional mandate, the FCC has set in motion universal service policies that will ensure that all citizens, including low-income consumers and those who live in rural, insular, or high-cost areas, shall have affordable service and will help connect eligible schools, libraries, and health care providers to the global telecommunications network.

On May 8, 1997, the FCC adopted the Federal-State Joint Board's recommendations for providing discounts to eligible schools and libraries on purchases of all commercially available telecommunications services, Internet access, and internal connections. These e-Rate discounts range from 20% to 90%. Total expenditures for Universal Service support is capped at $2.25 billion per year with a rollover into the following years for monies not fully disbursed in any given year.

PPS will continue to pursue e-Rate funding opportunities as a means to ensure the equitable distribution of technology-related resources. The strategic use of these resources has enabled PPS to make dramatic in-roads in reducing the existing "digital divide" in our district, and these investments at our high-poverty schools have significantly improved the quality of

education. We will continue to analyze our poverty data via student free and reduced lunch numbers, and will plan for and prioritize use of e-Rate funds to benefit populations and locations with the highest need for technology resources. Current e-Rate funding is used for:

- Network infrastructure improvements
- Telephone service
- Data connections and 100 Mbps wide area network (WAN) service, as well as improvements in connections/connectivity in the classroom

Appendix H includes a projected budget for 2006-2011.

MONITORING AND EVALUATION PROCESS

Effective technology planning must include mechanisms for ongoing monitoring and evaluation of the district's progress in reaching clearly defined goals and performance benchmarks. Formative evaluation activities will guide ongoing improvement and fine-tuning of the PPS Technology Plan as it is implemented. Summative evaluation activities will help determine the extent to which the plan has met its targeted goals. This planning and review process for technology integration in PPS will be coordinated with other stakeholders and aligned with the key performance goals identified in the most recent Continuous Improvement Plan (CIP), as well the PPS Strategic Plan.

The district's governance structure includes central offices and oversight committees whose work is aligned to the PPS Strategic Plan. As the goals and strategies outlined in the Technology Plan are implemented, key progress monitoring and evaluation data will be reported to the appropriate district stakeholder groups, such as the Office of Information Technology, Office of Teaching and Learning, the Superintendent's Leadership Team, and the Office of School Leadership. As appropriate, other district offices and committees will also be informed of the relevant progress of the PPS Technology Plan.

Technology integration is built into local school improvement plans, which are updated annually. Central office staff work with local school administrators throughout the school improvement planning process to provide leadership and support as needed.

The evaluation of Information Technology and Title IID initiatives will include measurements of changes in student achievement gathered through statewide tests, local classroom assessments, and teacher observations. Software programs such as Read 180, Read Naturally, My Reading Coach, and Cognitive Tutor are among the tools that will be used to monitor student achievement in English/language arts and mathematics. Measurements of changes in technology literacy will be gathered through teacher surveys, student completion of Ed Tech lessons, and review of classroom projects and artifacts. Inventories will help measure changes in access to computer hardware and other teaching and learning technologies among students and educators. The PPS Education Technology Standards and Guidelines (Appendix A) and Toolkit (Appendix B) will be important tools in evaluating the extent to which technology is integrated successfully into teaching and learning in the district.

As mentioned previously, the International Society for Technology in Education has created the Technology Support Index (TSI) assessment tool, which PPS Information Technology will continue to use to secure a profile of our technology support programs. The TSI recommendations that accompany the profile will inform ongoing IT program improvement. Additional information on the ISTE Technology Support Index can be found on page 29, and the district's current profile is in Appendix F.

Process for Ongoing, Long-Term Technology Planning

The nature of technology in the 21st century requires large organizations to remain fluid and flexible, and it is neither realistic nor wise to specify exactly where we expect PPS to be five years – or even three years – down the road in terms of technology. Factor in the current local funding crisis and it is even more difficult to forecast with specificity more than a year in advance. PPS will continue to evolve the IT governance structure, which will in turn help us analyze and prioritize individual projects and initiatives. Key internal IT performance indicators aligned to the PPS Technology Plan Goals and Strategies will be reviewed on a regular basis while the entire plan will be reviewed and updated annually.

Appendices

Appendix A:
- Recommended PPS Student Education Technology Standards
- Recommended PPS Teacher Education Technology Guidelines
- Recommended PPS Administrator Education Technology Guidelines

Appendix B:
- PPS Education Technology Standards Toolkit (2006-07)

Appendix C:
- School Technology Planning Guide (2006-07)

Appendix D:
- Model Schools Framework

Appendix E:
- Information Technology Accessibility and Use
- Internet Safety Policies and CIPA
- Acceptable Use Policy (AUP) for District Computer Systems

Appendix F:
- ISTE Technology Support Index (TSI) Assessment Profile for PPS

Appendix G:
- References Cited and Resources
- Glossary of Terms

Appendix H:
- Projected 2006-2011 Budget

Appendix A:

Portland Public Schools

Student Education Technology Standards

Adapted from the International Society for Technology in Education (ISTE) NETS Project

Social, Ethical, and Human Issues

1. Students develop positive attitudes toward technology uses that support life-long learning, collaboration, personal pursuits, and productivity.
2. Students practice responsible use of technology systems, information, and software.
3. Students understand the ethical, cultural, and societal issues related to technology.

Technology Research Tools

4. Students use technology tools to process data and report results.
5. Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.
6. Students use technology to locate, evaluate, and collect information from a variety of sources.

Technology Productivity Tools

7. Students use productivity tools to enhance learning, increase productivity, promote creativity, and effectively support collaboration.

Technology Problem-Solving and Decision-Making Tools

8. Students use technology resources for solving problems and making informed decisions.
9. Students employ technology in the development of strategies for solving problems in the real world.

Basic Operations and Concepts

10. Students demonstrate a sound understanding of the nature and operation of technology systems.
11. Students are proficient in the use of technology.

Technology Communications Tools

12. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
13. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Performance Levels

Introduce (I) – Students at this level are formally introduced to this performance skill.
Explore (E) – Students at this level are provided guided practice and require substantial support.
Apply (A) – Students at this level show evidence of growing proficiency but still require occasional guidance.
Master (M) – Students at this level demonstrate mastery through independent and appropriate use of skills to achieve high quality learning objectives.

Social, Ethical, and Human Issues	I = Introduce, E=Explore, A = Apply, M = Master												
1. Students develop positive attitudes toward technology uses that support life-long learning, collaboration, personal pursuits, and productivity. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
1.1 Cooperate with others while using technology.	I	I	E	A	M	M	M	M	M	M	M	M	M
2. Students practice responsible use of technology systems, information, and software. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
2.1 Care for and safely operate equipment and technology resources.	I	I	E	A	M	M	M	M	M	M	M	M	M
2.2 Demonstrate proper etiquette and respect of acceptable use while in public computing environments.	I	I	E	E	A	A	M	M	M	M	M	M	M
3. Students understand the ethical, cultural, and societal issues related to technology. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
3.1 Demonstrate understanding and respect for copyright laws and intellectual property rights.				I	E	E	A	A	M	M	M	M	M
3.2 Model ethical acquisition and use of digital information by properly citing sources.				I	E	E	A	A	M	M	M	M	M
3.3 Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole.							I	E	A	M	M	M	M

Technology Research Tools	I = Introduce, E=Explore, A = Apply, M = Master												
4. Students use technology tools to process data and report results. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
4.1 Demonstrate effective use of information processing tools and designs including spreadsheets, charts, formulas, functions, and graphs to process and display data to support problem solving and informed decisions.			I	E	E	A	A	M	M	M	M	M	M
4.2 Demonstrate the thoughtful use of a variety of layouts to effectively communicate information for a wide range of audiences and purposes.				I	E	E	A	M	M	M	M	M	M
5. Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
5.1 Use computer modeling, image processing, simulations, and data manipulation to develop understanding.				I	E	E	A	M	M	M	M	M	M
5.2 Evaluate and select appropriate technology-based options for research and information analysis.					I	E	E	A	M	M	M	M	M
6. Students use technology to locate, evaluate, and collect information from a variety of sources. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
6.1 Apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies.					I	E	A	M	M	M	M	M	M

6.2 Resolve information conflicts and validate information through research and comparison of data sources and content.						I	E	A	M	M	M	M	M

Technology Productivity Tools	I = Introduce, E=Explore, A = Apply, M = Master												
7. Students use productivity tools to enhance learning, increase productivity, promote creativity, and effectively support collaboration. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
7.1 Compose documents such as slide shows, posters, newsletters, brochures, and reports for defined audiences using productivity tools to ensure correct and consistent formatting, punctuation, capitalization, and spelling.			I	E	E	A	A	M	M	M	M	M	M
7.2 Integrate two or more productivity tools into a document including, but not limited to, rich text, charts, graphs, and paint and draw tools.					I	E	E	A	M	M	M	M	M

Technology Problem-Solving & Decision-Making Tools	I = Introduce, E=Explore, A = Apply, M = Master												
8. Students use technology resources for solving problems and making informed decisions. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
8.1 Synthesize different types of information to construct new meaning.				I	E	E	A	M	M	M	M	M	M
8.2 Review information analytically and transform it into useful knowledge to solve problems.					I	E	A	M	M	M	M	M	M
9. Students employ technology in the development of strategies for solving problems in the real world. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
9.1 Design and implement procedures to track trends, set timelines, review progress, and evaluate productivity regarding processes and products.					I	E	E	A	M	M	M	M	M

Basic Operations and Concepts	I = Introduce, E=Explore, A = Apply, M = Master												
10. Students demonstrate a sound understanding of the nature and operation of technology systems. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
10.1 Use a variety of input and storage devices such as mouse, keyboard, portable storage devices, voice/sound recorder, digital video, and DVD.	I	I	E	E	A	A	M	M	M	M	M	M	M
10.2 Use appropriate terminology to describe technology including operating systems, hardware elements, software applications, and networking components.	I	I	E	E	E	A	A	M	M	M	M	M	M
10.3 Demonstrate discriminating software use for defined tasks according to relevance and efficiency.				I	E	E	E	A	M	M	M	M	M
10.4 Demonstrate an understanding of concepts underlying hardware, software, and connectivity.				I	E	E	E	A	A	A	M	M	M
11. Students are proficient in the use of technology. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
11.1 Start and exit programs, create, name, save, and delete files, use menu options and commands, and work among multiple software applications.	I	I	E	E	A	A	A	M	M	M	M	M	M

11.2 Use proper keyboarding techniques such as ergonomically appropriate hand and body positioning and smooth and rhythmic keystroke patterns.			I	E	E	A	A	M	M	M	M	M	M
11.3 Navigate computer systems to access remote resources on networks such as printers and shared files and folders.				I	E	E	A	A	M	M	M	M	M
11.4 Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use.							I	E	E	A	M	M	M

Technology Communication Tools	I = Introduce, E=Explore, A = Apply, M = Master												
12. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
12.1 Effectively participate in electronic collaboration communities and virtual environments such as simulations, electronic science or mathematics laboratories, and virtual museum field trips as learner, initiator, contributor, and teacher/mentor.				I	E	E	E	A	A	M	M	M	M
12.2 Use emerging communication tools to interact with a variety of audiences.						I	E	E	A	A	M	M	M
13. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences. Students are expected to:	K	1	2	3	4	5	6	7	8	9	10	11	12
13.1 Produce digital media presentations and nonlinear interactive products for defined audiences which incorporate audio, video, graphics, and text.						I	E	E	A	A	M	M	M

Portland Public Schools

Teacher Education Technology Guidelines

Professional Productivity

1. Teachers demonstrate computing proficiency.
2. Teachers engage in continual professional growth in instructional technology.
3. Teachers demonstrate technology resource literacy and make thoughtful and effective use of technology tools and resources.

Technology-Rich Learning Environments and Experiences

4. Teachers organize and coordinate activities that maximize learning efficiency and productivity.
5. Teachers use 21st century communication methods to enhance learning experiences.
6. Teachers make use of technology resources and strategies to facilitate teacher and student research.

Technology-Embedded Pedagogy

7. Teachers integrate and align their curricula with school and district instructional technology goals.
8. Teachers utilize technology to customize learning opportunities for students.
9. Teachers use technology to support and advance higher order thinking.
10. Teachers use technology to supplement, support, and facilitate effective assessments and evaluations.

Digital-Age Ethics and Equity

11. Teachers model ethical technology use.
12. Teachers demonstrate knowledge and respect for equity issues and policies.

Performance Levels

Teachers are encouraged to reach the Apply level of proficiency in all guidelines.

Introduce (I) – Teachers at this level demonstrate little to no experience with this skill and require substantial support.
Explore (E) – Teachers at this level demonstrate occasional, basic use of this skill but would benefit from additional training and support.
Apply (A) – Teachers at this level demonstrate regular, proficient use of this skill.
Master (M) – Teachers at this level have mastered the complexities of this skill, make frequent and effective use of skills, and provide guidance to others.

Note: Teacher Education Technology Standards are not intended to be used for formal evaluations.

Professional Productivity	I = Introduce, E = Explore, A = Apply, M = Master			
1. Teachers demonstrate computing proficiency. Teachers will:	I	E	A	M
1.1 Effectively operate computer systems and peripherals.				
1.2 Use appropriate terminology related to computers and technology.				
1.3 Demonstrate knowledge of computer/peripheral parts, attend to simple connections and installations, and implement basic troubleshooting techniques.				
1.4 Demonstrate knowledge of the wide-ranging uses of technology in business, industry, and society.				
1.5 Make proficient use of district desktop and network utilities such as the student information system and email.				
1.6 Understand the nature and danger of malicious software including but not limited to spyware and viruses and know how to minimize the risks of exposure and infection.				
1.7 Conduct efficient searches of web-based resources using directories, library databases, and search engines including advanced search commands.				
2. Teachers engage in continual professional growth in instructional technology. Teachers will:	I	E	A	M
2.1 Facilitate the life-long learning of self and others through continued professional development opportunities and demonstrated use of technology.				
2.2 Participate in elearning opportunities (e.g. multimedia, discussion forums, online courses) to expand knowledge, enhance collaboration, and build capacity.				
3. Teachers demonstrate technology resource literacy and make thoughtful and effective use of technology tools and resources. Teachers will:	I	E	A	M
3.1 Utilize basic and discipline-specific technology devices (e.g., projectors, scan converters, digital storage devices, media players, handhelds, graphing calculators, MIDI and MP3 devices, scanners, digital cameras) to support instruction and inquiry specific to the content area.				
3.2 Access and analyze the authority, accuracy, currency, and relevancy of information collected from Internet, network, and local electronic references.				
3.3 Use a variety of technology-based, communication tools (e.g. e-mail, chat, internet conferences, web logs, threaded discussion boards) to publish information and interact with parents, students, experts, professional communities, fellow educators, and other audiences.				
3.4 Use word processing and/or other software to compose, revise, and produce materials, documents, newsletters, posters, and/or brochures.				
3.5 Use spreadsheets to collect, organize, and analyze data to produce reports and aid in planning and problem solving.				
3.6 Implement effective systems for organizing, locating, and archiving documents and files.				
3.7 Use graphical elements (e.g., pictures, graphs, clip art, charts) to enhance work and create professional products.				

3.8 Incorporate digital media resources (e.g., still images, movies, audio files, animations) into presentations for defined audiences including parents, students, and fellow educators.				

Technology-Rich Learning Environments and Experiences	**I = Introduce, E = Explore, A = Apply, M = Master**			
4. Teachers organize and coordinate activities which maximize learning efficiency and productivity. Teachers will:	I	E	A	M
4.1 Instruct students how to maximize their use of productivity tools to analyze information, solve problems, and demonstrate learning.				
4.2 Implement graphic organization technology to facilitate new thinking and conceptual understanding.				
4.3 Show students how to locate, access, and utilize educational technology resources and how to most effectively organize and share their work.				
5. Teachers use 21st century communication methods to enhance learning experiences. Teachers will:	I	E	A	M
5.1 Utilize and/or develop web-based communication resources to assist with instruction.				
5.2 Provide instruction and support as students use technology for writing, speaking, and/or performing.				
5.3 Participate in web-based events to collaborate with experts, community organization representatives, other educators, and/or students.				
6. Teachers make use of technology resources and strategies to facilitate teacher and student research. Teachers will:	I	E	A	M
6.1 Use local, network, and web-based resources.				
6.2 Provide appropriate access and instruction in the use of local, network, and Web-based resources.				

Technology-Embedded Pedagogy	**I = Introduce, E = Explore, A = Apply, M = Master**			
7. Teachers integrate and align their curricula with school and district instructional technology goals. Teachers will:	I	E	A	M
7.1 Apply technology-related research and best practices when designing curricula.				
7.2 Emphasize the integration of 21st century skills into teaching strategies and learning objectives.				
7.3 Use technology as a vehicle to bridge disciplines and content.				
8. Teachers utilize technology to customize learning opportunities for students. Teachers will:	I	E	A	M
8.1 Modify instruction to include the use of technology to address the learning style needs of diverse learners.				
8.2 Adapt instructional strategies, using available technology, to best fit learning objectives.				
9. Teachers use technology to support and advance higher order thinking. Teachers will:	I	E	A	M

9.1 Provide students with authentic, self-directed learning opportunities that use technology.				
9.2 Encourage students to use technology to analyze, synthesize, and evaluate information.				
9.3 Develop and implement technology-enhanced learning experiences that promote collaboration.				
9.4 Encourage students to demonstrate their understanding through the use of technology.				
10. Teachers use technology to supplement, support, and facilitate effective assessments and evaluations. Teachers will:	I	E	A	M
10.1 Effectively assess technology-rich learning activities.				
10.2 Use technology resources to process, interpret, and communicate assessment results.				
10.3 Use technology to monitor progress toward standards and analyze data to inform instruction.				

Digital-Age Ethics and Equity	**I = Introduce, E = Explore, A = Apply, M = Master**			
11. Teachers model ethical technology use. Teachers will:	I	E	A	M
11.1 Know, follow, and enforce district technology policies and procedures including acceptable use.				
11.2 Demonstrate knowledge of and respect for copyright and fair use regulations.				
11.3 Model legal and ethical practices related to technology.				
11.4 Understand and respect the differences among freeware, shareware, and commercial software and the fees involved.				
12. Teachers demonstrate knowledge and respect for equity issues and policies. Teachers will:	I	E	A	M
12.1 Practice equity concerning the use of computers and technology.				
12.2 Ensure that students with special needs have access to appropriate assistive and adaptive devices and other developmentally appropriate technology resources.				

Portland Public Schools

Administrator Education Technology Guidelines

Professional Productivity

1. Administrators demonstrate computing proficiency.
2. Administrators engage in continual professional growth in instructional technology.
3. Administrators demonstrate technology resource literacy and make thoughtful and effective use of technology tools and resources.

Technology-Rich Learning Environments and Experiences

4. Administrators organize and coordinate activities that maximize learning efficiency and productivity.
5. Administrators use 21st century communication methods to enhance learning experiences.
6. Administrators make use of technology resources and strategies to facilitate research.

Technology-Embedded Pedagogy

7. Administrators ensure that teachers integrate and align their curricula with school and district instructional technology goals.
8. Administrators facilitate the use of technology to customize learning opportunities.
9. Administrators serve as champions for technology as a way to support and advance higher order thinking.
10. Administrators use technology to supplement, support, and facilitate effective assessments and evaluations.

Digital-Age Ethics and Equity

11. Administrators model ethical technology use.
12. Administrators demonstrate knowledge and respect for equity issues and policies.

Vision, Leadership, and Management

13. Administrators inspire a shared vision for technology use.
14. Administrators provide leadership to foster an environment and culture that realizes a shared vision for technology use.
15. Administrators ensure management infrastructures are in place supporting adequate and effective technology use.

Performance Levels

Administrators are encouraged to reach the Apply level of proficiency in all guidelines.
Introduce (I) – Administrators at this level demonstrate little to no experience with this skill and require substantial support.
Explore (E) – Administrators at this level demonstrate occasional, basic use of this skill but would benefit from additional training and support.
Apply (A) – Administrators at this level demonstrate regular, proficient use of this skill.
Master (M) – Administrators at this level have mastered the complexities of this skill, make frequent and effective use of skills, and provide guidance to others.

Professional Productivity	I = Introduce, E = Explore, A = Apply, M = Master			
1. Administrators demonstrate computing proficiency. Administrators will:	I	E	A	M
1.1 Effectively operate computer systems and peripherals.				
1.2 Use appropriate terminology related to computers and technology.				
1.3 Demonstrate basic knowledge of computer/peripheral parts, attend to simple connections and installations, and implement basic troubleshooting techniques.				
1.4 Demonstrate knowledge of the wide-ranging uses of technology in business, industry, and society.				
1.5 Make proficient use of district desktop and network utilities such as the student information system and email.				
1.6 Understand the nature and danger of malicious software including but not limited to spyware and viruses and know how to minimize the risks of exposure and infection.				
1.7 Conduct efficient searches of web-based resources using directories, library databases, and search engines including advanced search commands.				
2. Administrators engage in continual professional growth in instructional technology. Administrators will:	I	E	A	M
2.1 Facilitate the life-long learning of self and others through continued professional development opportunities and demonstrated use of technology.				
2.2 Participate in elearning opportunities (e.g., multimedia, discussion forums, online courses) to expand knowledge, enhance collaboration, and build capacity.				
3. Administrators demonstrate technology resource literacy and make thoughtful and effective use of technology tools and resources. Administrators will:	I	E	A	M
3.1 Demonstrate awareness of use and potential of technology devices (e.g., projectors, digital storage devices, media players, handhelds, graphing calculators, MIDI and MP3 devices, digital cameras) to support instruction.				
3.2 Access and analyze the authority, accuracy, currency, and relevancy of information collected from Internet, network, and local electronic references.				
3.3 Use a variety of technology-based, communication tools (e.g., e-mail, chat, internet conferences, web logs, threaded discussion boards) to publish information and interact with parents, students, experts, professional communities, teachers, fellow administrators, and other audiences.				
3.4 Use word processing and/or other software to compose, revise, and produce materials, documents, newsletters, posters, and/or brochures.				
3.5 Use spreadsheets to collect, organize, and analyze data to produce reports and aid in planning and problem solving.				
3.6 Implement effective systems for organizing, locating, and archiving documents and files.				

3.7 Use graphical elements (e.g., pictures, graphs, clip art, charts) to enhance work and create professional products.				
3.8 Incorporate digital media resources (e.g., still images, movies, audio files, animations) into presentations for defined audiences including parents, students, teachers, and fellow administrators.				

Technology-Rich Learning Environments and Experiences	**I = Introduce, E = Explore, A = Apply, M = Master**			
4. Administrators organize and coordinate activities which maximize learning efficiency and productivity. Administrators will:	I	E	A	M
4.1 Provide learning opportunities for staff to maximize their use of productivity tools to analyze information, solve problems, and demonstrate learning.				
4.2 Implement technology to organize and facilitate group planning, new thinking, and/or conceptual development.				
4.3 Ensure staff can locate, access, and utilize educational technology resources and how to most effectively organize and share their work.				
5. Administrators use 21st century communication methods to enhance learning experiences. Administrators will:	I	E	A	M
5.1 Utilize and/or develop web-based resources to assist with communication and collaboration.				
5.2 Participate in web-based events and collaborate with experts, community organization representatives, teachers, and other administrators.				
6. Administrators make use of technology resources and strategies to facilitate research. Administrators will:	I	E	A	M
6.1 Use local, network, and web-based resources.				
6.2 Provide appropriate access and support in the use of local, network, and Web-based resources.				

Technology-Embedded Pedagogy	**I = Introduce, E = Explore, A = Apply, M = Master**			
7. Administrators ensure that teachers integrate and align their curricula with school and district instructional technology goals. Administrators will:	I	E	A	M
7.1 Provide leadership and support as teachers apply technology related research and best practice when designing curricula.				
7.2 Promote the integration of technology skills into teaching strategies and learning objectives.				
7.3 Promote the use of technology as a vehicle to bridge disciplines and content.				
8. Administrators facilitate the use of technology to customize learning opportunities. Administrators will:	I	E	A	M
8.1 Support teachers as they modify instruction to include the use of technology to address the learning style needs of diverse learners.				

8.2 Encourage teachers to adapt instructional strategies, using available technology, to best fit learning objectives.				
9. Administrators serve as champions for technology as a way to support and advance higher order thinking. Administrators will:	I	E	A	M
9.1 Encourage teachers to involve students in authentic, self- directed learning opportunities that use technology.				
9.2 Support teachers as they encourage students to use technology to analyze, synthesize, and evaluate information.				
9.3 Support teachers as they develop and implement technology-enhanced learning experiences that promote collaboration.				
9.4 Support teachers as they encourage students to demonstrate their understanding through the use of technology.				
10. Administrators use technology to supplement, support, and facilitate effective assessments and evaluations. Administrators will:	I	E	A	M
10.1 Effectively assess technology-rich learning activities.				
10.2 Use technology resources to process, interpret, and communicate assessment results.				
10.3 Use technology to monitor progress toward standards and analyze data to inform instruction.				

Digital-Age Ethics and Equity	**I = Introduce, E = Explore, A = Apply, M = Master**			
11. Administrators model ethical technology use. Administrators will:	I	E	A	M
11.1 Know, follow, and enforce district technology policies and procedures including acceptable use.				
11.2 Demonstrate knowledge of and model respect for copyright and fair use regulations.				
11.3 Model legal and ethical practices related to technology.				
11.4 Understand and respect the differences among freeware, shareware, and commercial software and the fees involved.				
11.5 Know the programs for which the district and school hold licenses and abide by and enforce their legal use.				
12. Administrators demonstrate knowledge and respect for equity issues and policies. Administrators will:	I	E	A	M
12.1 Practice equity concerning the use of computers and technology within buildings, schools, and/or programs for which they are responsible.				
12.2 Ensure that students with special needs have access to appropriate assistive and adaptive devices and other developmentally appropriate technology resources as outlined in the district Accessible Information Technology Policy and Guidelines.				

Vision, Leadership, and Management	I = Introduce, E = Explore, A = Apply, M = Master			
13. Administrators inspire a shared vision for technology use. Administrators will:	I	E	A	M
13.1 Facilitate the development by stakeholders of a shared vision for technology use and effectively communicate that vision.				
13.2 Maintain an inclusive process to develop, implement, and monitor a dynamic, long-range, and systemic technology plan to achieve the shared vision.				
13.3 Require careful consideration of research to support technology planning.				
14. Administrators provide leadership to foster an environment and culture that realizes a shared vision for technology use. Administrators will:	I	E	A	M
14.1 Foster a culture of responsible risk-taking and continuous innovation with technology.				
14.2 Advocate for research-based, effective practices in technology use.				
14.3 Encourage all teachers to use technology to increase their instructional effectiveness and integrate appropriate technology into their curriculum.				
14.4 Ensure that district adopted technology standards are clearly communicated to staff and the community.				
14.5 Take an active leadership role in building and district technology planning efforts, decisions about hardware acquisition, staff development in technology, and integration of technology into the curricula.				
14.6 Formally identify and reasonably compensate instructional technology leaders for their contributions.				
15. Administrators ensure management infrastructures are in place supporting adequate and effective technology use. Administrators will:	I	E	A	M
15.1 Support policies and procedures to ensure effective operation of technologies.				
15.2 Allocate financial and human resources to ensure full and sustained implementation of the school technology plan.				
15.3 Integrate plans (strategic, technology, school improvement, etc.) and policies to align efforts and leverage resources.				
15.4 Implement procedures to support continuous improvement of technology systems and replacement cycles.				
15.5 Coordinate a formal staff development program that offers a range of focused technology opportunities including a means for assessing their effectiveness.				
15.6 Optimize building space to support instructional technology initiatives and to consider readiness for future innovation.				
15.7 Utilize web-based resources to further communication with parents and community.				

Appendix B:

Education Technology Standards

Toolkit

Portland Public Schools
2006-2007

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STANDARDS TOOLKIT GUIDE

STRAND: Subcategories within Education Technology

STANDARD NUMBER

Middle School Education Technology — Portland Public Schools, OR

Strand: Social, Ethical, and Human Issues
Standard 8.3: Students understand the ethical, cultural, and societal issues related to technology.
8.3.1 Demonstrate understanding and respect for copyright laws and intellectual property rights.
8.3.2 Model ethical acquisition and use of digital information by properly citing sources.

STANDARD

CONTENT DESCRIPTOR KEY:
Example – 8.3.2
8 = Grade level
3 = Standard number
2 = Content descriptor

CONTENT DESCRIPTOR: The description of content that supports each standard.

STRAND: SOCIAL, ETHICAL, AND HUMAN ISSUES		
Descriptor	**Instructional Strategies/Activities**	**Resources**
STANDARD 1 Positive Attitudes Toward Technology Uses: Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.		
4.1.1 Cooperate with others while using technology	• Assign cooperative learning roles • Have a discussion about computer netiquette: taking turns, responding politely, sharing roles and responsibilities • Implement collaborative learning projects • Creating blogs	• PBS ed online workshop: Cooperative and Collaborative Learning • CIESE – Collaborative Projects • Netiquette • Globe • SDSU WebQuest Page • KeyPals Club • Writely: Web Word Processor • LazyBase: Sharable Custom Database • Wiki in Education Social Bookmarks • Portaportal • Jots.com • Del.icio.us • Furl • Jotspot live Customized Start Pages • Personalized Google Homepage • NetVibes Blogs • http://www.blogger.com • www.typepad.com
STANDARD 2 Responsible Use of Technology Systems, Information, and Software: Students practice responsible use of technology systems, information, and software.		
4.2.1 Care for and safely operate equipment and technology resources.	• Discuss rules for safety within the context of other safety measures such as playground rules, traffic safety, fire drills, and so on • Look at how computers work • Demonstrate proper use of equipment and resources	• CyberSmart Curriculum • missingkids.com • How Stuff Works • Healthy Computing for Kids
6.2.2 Demonstrate proper etiquette and respect of acceptable use while in public computing environments.	• Have a discussion about computer netiquette: taking turns, responding politely, sharing roles and responsibilities • Go over PPS Acceptable Use Regulation	• Netiquette • Cyberethics for Kids • PPS Acceptable Use Regulation • CyberSmart Curriculum

	• Come up with classroom rules and make posters	
STANDARD 3 Ethical, Cultural, and Societal Issues: Students understand the ethical, cultural, and societal issues related to technology.		
8.3.1 Demonstrate understanding and respect for copyright laws and intellectual property rights.	• Provide students with scenarios of questionable practices and have them research whether they are within ethical copyright and intellectual property use. • Demonstrate how to create a bibliography • Look up current events and search for articles dealing with copyright issues (i.e., Napster, Apple/Beatles)	• TEACH Act • Copyright Tutorial • Copyright Bay • Oregon State Library Information System (OSLIS) Citation Maker • OSLIS Copyright Section • The Landmark Project's Citation Machine • Multnomah County Library: Articles-Research
8.3.2 Model ethical acquisition and use of digital information by properly citing sources.	• Demonstrate how to create a bibliography • Include the bibliography in multimedia projects, etc. • Look up current events and search for articles dealing with copyright issues (i.e., podcasting, music downloads, videos, webcasts, etc.)	• Oregon State Library Information System (OSLIS) Citation Maker • The Landmark Project's Citation Machine • 4Teachers.org NoteStar • Multnomah County Library: Articles-Research
9.3.3 Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole.	• Have students create a timeline for when technological innovations have appeared and discuss how those innovations have changed the way we work, learn, and operate in society as a whole. • Look up current events relating to real-world technological innovations • Personal timeline of technological acquisition and use • Book study on global economy and the impact of technology	• Oregon State Library Information System (OSLIS) • Multnomah County Library: Articles-Research • Triumph of the Nerds: A History of the Computer • Multnomah County Library Catalog Search • Amazon.com • Technological Innovations

STRAND: RESEARCH TOOLS		
Descriptor	**Instructional Strategies/Activities**	**Resources**
STANDARD 4 Use Technology to Process Data and Report Results: Students use technology tools to process data and report results.		
7.4.1 Demonstrate effective use of information processing tools and designs including spreadsheets, charts, formulas, functions, and graphs to process and display data to support problem solving and informed decisions.	• Have students construct virtual or traditional science fair displays, which may include interactive information • Present a multimedia research project • Provide an opportunity for students to share lab results electronically	• eCYBERMISSION • ExploraVision • PowerPoint Tips • Powerpoint online tutorial • Powerpointlessness • Learning Tools: Graphic Organizers • Interactive Graphic Organizers • PPS Science Curriculum Links
7.4.2 Demonstrate the thoughtful use of a variety of layouts to effectively communicate information for a wide range of audiences and purposes.	• Evaluate websites, magazine covers, newspapers for their visual and aesthetic appeal and ease of navigation • Have a discussion about the basics of multimedia design • Interpreting data and graphs • Create a newsletter	• Webby Awards • Oregon School Library Information System (OSLIS): Presenting Results • Web Design Tips • CoolPages – Design and LayoutMultimedia
STANDARD 5 Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.		
7.5.1 Use computer modeling, image processing, simulations, and data manipulation to develop understanding.	• Make use of virtual manipulatives for mathematics concepts • Have a discussion on historical instances of data and image manipulation; have students distort their own images • Create Stella models and simulations • Create GIS learning opportunities • Create Inspiration maps • Use Vernier probes • Introduce animation techniques	• National Library of Virtual Manipulatives for Interactive Mathematics • NCTM Illuminations • SHODOR Project Interactive • PBS TeacherLine Interactives • Stella – Systems Thinking • GIS o K-12 Education o ESRI, Overview o ArcView • Geocaching • Inspiration • Vernier • Animation: Clay/Stop Action • Plants in Motion Internet Hoaxes • The Onion • Commissar Vanishes

		• SNOPES
8.5.2 Evaluate and select appropriate technology-based options for research and information analysis.	• Have librarian give an overview of possible research tools • Have student evaluate search engines • Build information literacy skills	• Middle and High School OSLIS • OSLIS: Evaluate On-Line Subscription Resources • Wikipedia • List of Search Engines • Educational Portals and Starting Points • Search Tools for Kids, Teens, and Teachers
STANDARD 6 Locate, Evaluate, and Collect Information: Students use technology to locate, evaluate, and collect information from a variety of sources.		
7.6.1 Apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies.	• Discussion of how different search engines work • Ask students to conduct research on the same topic assigning them different search engines. Discuss strengths and weaknesses discovered. • Strategies for effective keyword and Boolean searches	• Wikipedia: Search Engines • Search Strategies: Univ. at Albany • Oregon State Library Information System (OSLIS) • Multnomah County Library
8.6.2 Resolve information conflicts and validate information through research and comparison of data sources and content.	• Compare current events coverage by different media sources. Discuss bias and its influence on information reliability • Ask students to examine web sites which look legitimate but which contain grievous inaccuracies, extreme bias, and/or intentional misinformation • Have a librarian come to build information literacy skills • Have students research a topic using different resources, i.e., print materials, online materials, interviews, etc.	• Newseum – Today's Front Pages • http://www.world-newspapers.com Internet Hoaxes o RYT Hospital-Dwayne Medical Center o http://martinlutherking.org o The Onion o Snopes

STRAND: PRODUCTIVITY TOOLS		
Descriptor	**Instructional Strategies/Activities**	**Resources**
STANDARD 7 Technology Use to Enhance Learning: Students use productivity tools to enhance learning, increase productivity, promote creativity, and effectively support collaboration.		
7.7.1 Compose documents such as slide shows, posters, newsletters, brochures, and reports for defined audiences using productivity tools to ensure correct and consistent formatting, punctuation, capitalization, and spelling.	• Have class develop a rubric for a final presentation • Create a slideshow, poster, brochure, newsletter	• Formulaic over-application of PowerPoint: The Gettysburg PowerPoint Presentation • RubiStar • Assessment Rubrics from Kathy Schrock • 12 Tips for Creating Better Presentations • Newsletter Design TipsPoster Art of WW II
8.7.2 Integrate two or more productivity tools into a document including, but not limited to, rich text, charts, graphs, and paint and draw tools.	• Research project	• Learning Tools: Graphic Organizers • Interactive Graphic Organizers • ReadWriteThink: Student Materials • Google Maps

STRAND: PROBLEM-SOLVING AND DECISION-MAKING TOOLS		
Descriptor	**Instructional Strategies/Activities**	**Resources**
STANDARD 8 Students use technology resources for solving problems and making informed decisions.		
7.8.1 Synthesize different types of information to construct new meaning.	• Research project–plate tectonics, weather patterns • Create Stella model	• USGS: Earthquake Data • US Census Bureau • Portland Maps • Learning Tools: Graphic Organizers • ReadWriteThink: Student Materials • Interactive Graphic Organizers • Google Maps • Google Earth • Google Transit
7.8.2 Review information analytically and transform it into useful knowledge to solve problems.	• Research project	• USGS: Earthquake Data • US Census Bureau • Portland Maps • Learning Tools: Graphic Organizers • Interactive Graphic Organizers • ReadWriteThink: Student Materials

STANDARD 9 **Employ Technology in the Development of Strategies for Solving Problems: Students employ technology in the development of strategies for solving problems in the real world.**		
8.9.1 Design and implement procedures to track trends, set timelines, review progress, and evaluate productivity regarding processes and products.	???	• Assessment Rubrics from Kathy Schrock

STRAND: BASIC OPERATIONS AND CONCEPTS		
Descriptor	**Instructional Strategies/Activities**	**Resources**
STANDARD 10 Nature and Operation of Technology Systems: Students demonstrate a sound understanding of the nature and operation of technology systems		
6.10.1 Use a variety of input and storage devices such as mouse, keyboard, portable storage devices, voice/sound recorder, digital video, and DVD.	• Demonstrate use of such devices • Record student presentations • Make a movie	• How Stuff Works: Peripherals • Computers: How Stuff Works • Wikipedia: computer hardware • unitedstreaming
7.10.2 Use appropriate terminology to describe technology including operating systems, hardware elements, software applications, and networking components.	• Have a discussion on technology terminology • Teacher models use of terminology • Have students create a game or quiz on appropriate terminology	• Computers: How Stuff Works • Computer Basics Quiz • Online Computer Dictionary • Technology Buzzwords for Students • TechWeb: TechEncyclopedia
8.10.3 Demonstrate discriminating software use for defined tasks according to relevance and efficiency.	• Introduce specific software and its uses • Give assignments and tasks using specific software	• List of software genres
10.10.4 Demonstrate an understanding of concepts underlying hardware, software, and connectivity.	• Research report	• Computers: How Stuff Works

STANDARD 11 Proficient Use of Technology: Students demonstrate proficient use of technology.		
7.11.1 Start and exit programs, create, name, save, and delete files, use menu options and commands, and work among multiple software applications.	• Have students train other peers	N/A
7.11.2 Use proper keyboarding techniques such as ergonomically appropriate hand and body positioning and smooth and rhythmic keystroke patterns.	• Have students train other peers • Direct instruction in keyboarding techniques	• PPS Keyboarding Recommendations • Utah State Dept. of Education • Jeffco: Colorado Public Schools • Jordan: Utah Public Schools •
8.11.3 Navigate computer systems to access remote resources on networks such as printers and shared files and folders.	• Research project • Student must save to teacher's shared folder • Have students train other peers	N/A
10.11.4 Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use.	• Research project • Have students train other peers	• Troubleshooting • Tech Support • Nerd Help

STRAND: COMMUNICATION TOOLS		
Descriptor	**Instructional Strategies/Activities**	**Resources**
STANDARD 12 Use Telecommunications to Collaborate, Publish, and Interact: Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. (10th Grade Mastery)		

9.12.1 Effectively participate in electronic collaboration communities and virtual environments such as simulations, electronic science or mathematics laboratories, and virtual museum field trips as learner, initiator, contributor, and teacher/mentor.	• WebQuests
	• Keypals
	• Collaborative project gathering data
	• Collaborative writing assignment
	• Sharing resources via social bookmarks
		• OSLIS: Collaboration Plans & Projects
		• Globe
		• SDSU WebQuest Page
		• KeyPals Club
		• Writely: Web Word Processor
		• LazyBase: Sharable Custom Database
		• Wiki in Education
		• Jots.com
		• Del.icio.us
		• Virtual Museums (examples):
		  o Louvre
		  o The Hermitage
		• Portaportal.com

Appendix C:

School Technology Planning Guide 2006-2007

Step 1: Develop a Vision and Policy

Objective: *To develop a vision and policy for integrating technology into school improvement efforts based on the needs of 21st century learners.*

The most successful technology plans originate from a collective vision where the entire school community rallies behind them with funding, enthusiasm, and a hands-on effort toward connecting their classrooms, homes, and community resources to all things digital.

Action Steps for Developing a Vision

1. **Who Should Be Involved in Creating a Technology Vision?**
   The membership of your technology planning committee should represent populations in your school. Consider the following mix of team members: grade level teachers, content area representatives, student body representative, library media specialist, administrator, community member, classified staff, special populations advocate, curriculum coordinator, technology support person.
2. **Defining and Establishing Necessary Policy**
   Good technology policy directly supports school improvement plan goals, addresses big-picture issues surrounding the implementation of technology, and provides parameters and direction for implementing and using technology. Consider the following policy questions:
   - What teaching and learning goals can be best addressed via technology?
   - Who is ultimately responsible for successful implementation?
   - How will you measure the success of technology efforts?
   - Who is responsible for interpreting evaluation data?
   - What funds and time will be available to implement technology efforts?
   - What is the timeline for implementation and who has authority to change the timeline?
3. **Include your technology vision in your school improvement plan.**

Step 2: Analyze Technology Needs

Objective: *To conduct a needs assessment of how technology should address important learning goals in your school and community.*

Your technology planning committee will work more efficiently if members are knowledgeable about the important uses of technology in education. Having a common understanding of research findings and best practices provides a foundation on which to plan the use of technology in your school. The information from stakeholders can tell the planning committee how and where technology can increase or improve learning within the school and the community.

Action Steps for Analyzing Technology Needs

Your technology committee may want to parcel out the tasks to subcommittees whose job is to gather the necessary data. The tasks are as follows:

1. **Student Needs Assessment**
   Conduct a student needs assessment to identify the essential learning outcomes for your students at the appropriate development levels and uses of technology to address those priorities.
2. **Parent-Community Needs Assessment**
   Conduct a parent-community needs assessment to identify parent and community involvement priorities and uses of technology to address those priorities to help student achieve essential learning outcomes.

Once the priorities for student learning and parent-community involvement have been identified, the technology planning committee can shift its focus to assessing the staff skills and technology resource needs of the school. Your committee will need to do the following:

3. **Staff Needs Assessment**
   Conduct a staff needs assessment to identify staff needs and uses of technology to address those priorities to help students achieve essential learning outcomes.
4. **Technology Resource Needs Assessment**
   Conduct a technology resource needs assessment to identify the technology resources your school needs to empower students, parents, and staff members to achieve essential learning outcomes.

The purpose of a technology needs assessment is to identify the gap between your school's technology vision and goals and its present situation. Closing this gap should become the focus of your technology planning. Rules of thumb in conducting your needs assessment:

- Involve representatives from among all stakeholders in the collaborative needs assessment process.
- Keep your vision of essential learning goals the primary focus for your needs assessment.
- Document the information you already have.
- Identify gaps in your information that indicate what additional information needs to be obtained during the needs assessment process.
- Choose data collection methods and instruments that are appropriate for those from whom you are gathering your information.
- Make a timeline and devise a plan for gathering your information.
- Be sensitive that priorities emerging from your needs assessment may require some people to shift uses of their time and resources.
- Report your findings, priorities, and implications for action to all stakeholders to establish consensus about subsequent decisions.

5. **Have a primary evaluator systematically analyze and synthesize all of the information into a summary report.**

Step 3: Focus on Student-Centered Learning

Objective: *To establish priorities for the uses of technology in meeting technology literacy and standards-based learning goals.*

A learner-centered approach is based on the understanding that each learner is unique. When integrating technology into a learner-centered classroom, students' individualized learning styles and strategies become apparent. Students with different levels of achievement and content knowledge require a range of technology resources. Students also require guidance on how to use electronic tools appropriately.

Action Steps for Focusing on Student Learning

1. Identify learning goals and priorities that can be met through uses of technology. Consider these statements:
   - Our vision statement specifies the following essential student learning goals…
   - Our students' existing strengths for achieving this vision are…
   - Our students face the following primary barriers to achieving this vision…
   - Key action strategies to help our students overcome these primary barriers are…
   - Empowering uses of technology to facilitate and enhance student learning are…
   - Ways to assess the impact technology has on student learning goals are…
2. Establish a software adoption committee for each grade level and/or content area. Using a software review form can help focus the committee's evaluation and selection, as well as provide a software profile for teachers to access when planning to use technology resources in their classroom activities. The Education Software Preview Guide is at: http://www-ed.fnal.gov/espg/evalass.htm

Step 4: Involve Parents and the Community

Objective: *Increase parental and community awareness of and participation in the positive role technology can play in their children's learning.*

In today's fast-paced, changing culture, it is absolutely vital to involve family and community members in raising children's motivation to learn.

Action Steps for Involving Parents and the Community

1. Sponsor a Family Technology Event where parents get hands-on experience with the types of technology the school plans to purchase or already uses. Arrange for volunteers to conduct short parental interviews or use a survey to collect parental needs assessment information.
2. Compile and synthesize the findings from the parent-community needs assessment data. The guiding question is *What does the parent-community need to help students reach essential learning outcomes?* Consider these statements:
    - Our parent-community's existing strengths for achieving this vision are…
    - Our parents and community members face the following primary barriers to achieving this vision…
    - Key action strategies to help parents and community overcome these primary barriers are…
    - Empowering uses of technology to facilitate and enhance parent-community involvement are…
    - Ways to assess the impact technology has on parent-community involvement are…
3. Conduct a parent involvement program. Parent involvement strategies include the following:
    - Provide a parent-friendly school climate that encourages parents and family members to collaborate on technology initiatives.
    - Develop open and ongoing communications with parents about technology planning.
    - Provide opportunities for parents to help solve problems related to technology use, including developing plans for their own technology skill development.
    - Tap parents' technology knowledge and expertise by inviting knowledgeable parents to be advisors and resource providers on your implementation team.
    - Design the technology plan to benefit and reach all families in the school community.
    - Request and support parental volunteers in your school.

Step 5: Support Professional Development

Objective: *To provide school staff with technology-rich learning opportunities to enhance professional practices.*

Supporting technology-rich professional development opportunities for teachers and other school personnel is a critical component of a school technology plan. Four types of technology-related proficiencies deserve particular attention: (1) Professional Productivity; (2) Technology-Rich Learning Environments and Experiences; (3) Technology Embedded Pedagogy; and (4) Digital-Age Ethics and Equity. For more information, refer to the PPS Teacher Education Technology Standards.

Action Steps for Supporting Professional Development

1. Conduct a thorough staff needs assessment and compile findings. Consider these statements:
    - Our staff's existing strengths for achieving this vision are…
    - Our staff members face the following primary barriers to achieving this vision…
    - Key action strategies to help our staff members overcome these primary barriers are…
    - Empowering uses of technology to facilitate and enhance our staff are…
    - Ways to assess the impact technology has on our organizational staff are…
2. Make available online subscriptions and ongoing professional training services that address the technology needs identified in your staff needs assessment.
3. Use the PPS Teacher Education Technology Standards with teacher teams to identify their technology proficiency levels. Teachers can then self-assess their progress as well as mentor others in area(s) where they have excelled personally.

4. Contact district instructional technology specialists and arrange for professional development workshops based on staff technology needs.

Step 6: Build a Technology Infrastructure

Objective: *To adequately supply learners of all ages with vital technology resources.*

Many schools are implementing technology plans to reach beyond the walls of their school to others in local and distant communities for a variety of purposes such as parent and family collaboration, use of multimedia learning tools, global learning communities, and business partnerships.

Action Steps for Building a Technology Infrastructure

1. Conduct a needs assessment for technology resources. Technology resource needs should address the findings from the student, parent-community, and staff needs assessments. Consider these statements:
    - Our vision statement specifies the following about technology resources…
    - Our technology resources' existing strengths for achieving this vision are…
    - Our technology resources present the following primary barriers to achieving this vision…
    - Key action strategies to help overcome these primary technology resource barriers are…
    - Ways to assess the impact our technology resource have on students, parents, community, and staff are…
2. Create your own technology resource usage policies statements and promote adherence to your district's acceptable use policy.
3. Consider the model schools found in the district instructional technology plan as a starting point.
4. Components of a school technology infrastructure to consider:
    - A network with multimedia access in each room and growth capacity as the school adds equipment and bandwidth over time
    - Need for adequate computer labs for whole class functions and classroom computers for rotated use and teacher led activities

Step 7: Establish Multiyear Funding

Objective: *To determine multiyear funding strategies for implementing your technology plan and sustaining school improvement efforts.*

Staff to monitor and write grant applications are often in short supply. There may be high turnover in the ranks of administrators and teachers, which brings with it a loss of professional development investments. Other forces that confront poor schools are high rates of student mobility and lack of parent involvement. These forces make continuity in instruction and student learning difficult, while hindering the implementation of technology.

Action Steps for Establishing Multiyear Funding

1. Review technology-related needs identified in your comprehensive needs assessment report and identify those that are under-funded. Conduct the necessary research to obtain special funding for those needs not currently accounted for in your school's budget.
2. Review how to best leverage the various sources to develop a total funding package which can be sustained over time.

Step 8: Evaluate Processes and Outcomes

Objective: *To examine the implementation processes for developing your infrastructure and the outcomes as they relate to student learning.*

Timely feedback and constructive criticism on any revisions or adjustments to your technology plan is necessary. Evaluation helps ensure your technology infrastructure is aligned with your school's overall vision for improvement. Evaluating your development progress will also give you insight into your technology use and its impact on student learning.

Action Steps for Evaluating Processes and Outcomes

1. There are five major steps to putting together an evaluation report that identifies and describes the impact of technology in your school. Use these steps to guide your evaluations:
    - Focusing the evaluation
    - Designing the evaluation
    - Collecting information
    - Analyzing and interpreting information
    - Reporting information
2. The building blocks of evaluation are guiding questions such as those suggested below. Your evaluation questions should be aligned with the purpose of your evaluation.

    Process Questions
    - What events and methods describe how the implementation of technology influenced student learning?
    - Are your schedule, equipment deployment, and facility coordination being implemented as planned?
    - What professional development efforts help teachers to learn to use technology in functional and engaging ways for student learning and administrative duties?
    - How does the integration of technology and the learning resources it brings into the classroom change instructional techniques?

    Outcome Questions
    - What instructional practices are in place to support engaged student learning? Authentic student learning?
    - How has engaged learning with technology affected learner attitudes and motivation?
    - How well do students perform on standardized measures of achievement where technology was used to support learning?
    - How has teaching with technology affected teachers' workloads and methods?

Technology Planning Resources

Develop a Vision and Policy

Closing the Equity Gap in Technology Access and Use: A Practical Guide for K-12 Educators
www.netc.org/equity
This site, from NWREL's Northwest Educational Technology Consortium, contains a number of valuable resources, including checklists of questions to help assess building/district access issues and possible strategies, online forms to help plan for technology, various links to additional resources, and a useful bibliography to view reference information.

Joint Center for Poverty Research
www.jcpr.org/
This site from Northwestern University/University of Chicago is a national and interdisciplinary community of researchers whose work advances the understanding of what it means to be poor and live in America. This site can help educators and administrators fulfill their vision to include an understanding of poverty within their schools and district.

National School Boards Association (NSBA)
www.nsba.org
Their mission is to foster equity and excellence in all aspects of public education in the United States through school board leadership. Their site is essential to school board members wanting the information services NSBA offers, including upcoming conferences and seminars, publications, training opportunities, and advocacy activities. School leaders who access this network of resources may find it helpful in creating their empowering vision.

The Northwest Educational Technology Consortium (NETC)
http://www.netc.org/planning
This group believes that using technology effectively means first considering its uses and potential. This site looks at technology plans from the Northwest and from across the country, providing access to research concerning the planning process. This site is of particular use in Step 1—Develop a Vision—because the information deals with the impact of technology on educational reform and how the vision must adapt to the changing world in which students live.

National Center for Education Statistics (NCES)
http://nces.ed.gov/surveys/datasurv.html
This is an index to resources about important recent surveys and data in the field of education. Educators and technology planning committees can seek studies, surveys, and data, accessing solid information to help them understand and plan for technology.

Pathways to School Improvement
www.ncrel.org/pathways.htm
Hosted by the North Central Regional Educational Laboratory, this site is an award-winning repository of "timely topics" and "critical issues" ranging from parent and family involvement to professional development. Policymakers, administrators, and teachers wanting access to information related to school improvement should use this site.

Global Schoolhouse
www.gsh.org/
This site links kids around the world, creating a "connected" learning community. The site includes educational resources that are available to parents and teachers, while kids and teens are exposed to contests, online publications, and cyberfairs that have been created just for them. Schools can register themselves at this site, and technology planners can find examples of schools that use technology effectively when searching for ways to improve the technology implementation process at their own school.

Journey North: A Global Study of Wildlife Migration
www.learner.org/jnorth/
This Annenberg/CPB Math and Science Project uses data supplied by schoolchildren to track the migratory habits of different wildlife. This site is included here as a possible curricular resource. Visiting this site with children can be a wonderful way to integrate computers into the science classroom.

National Center for Supercomputing Applications
www.ncsa.uiuc.edu/edu/
This site champions the productive use of emerging computing and communication technologies to advance education, science, business, government, and society. Projects include the Education Course: Emerging Technologies in Science, Education, and Business. The course is designed for students interested in understanding new technologies and scientific methods for use in education and/or the workplace. For example, RiverWeb seeks to construct interdisciplinary, digital knowledge networks for the Mississippi River Basin, while Chickscope follows the day-by-day development of the baby chick from conception to hatching. This site is included as a possible curricular resource.

NASA's Marshall Space Flight Center
http://science.nasa.gov/
This colorful and fascinating site is devoted to all aspects of science that relate to space travel and exploration: astrophysics, microgravity science (space processing), biotechnology, and Earth science. This site is included here as a possible curricular resource.

Primary and Secondary School Internet User Questions
http://cosn.org/
This site**,** sponsored by the Consortium for School Networking (CoSN), is a nonprofit organization that advocates the use of telecommunications in K-12 education to help students achieve new educational standards. CoSN hopes to improve policies concerning school networking by building a strong broad-based coalition. This site has links to information on the E-rate and teacher training in advanced technology. Teachers, especially those on technology planning committees, can take advantage of this site's wide array of information on funding, getting connected, and technology use in the classroom.

Exploratorium
www.exploratorium.edu/
San Francisco's Exploratorium hosts this interactive site that can be used by children and adults. The site includes links to interactive online exhibits as well as access to job listings, membership information, and museum hours. Teachers, parents, and students can use this site to learn about science, art, history, and human perception. The Exploratorium web site demonstrates community involvement in two ways: it shows a specific community involved in making learning more creative and fun, and can also involve the urban community in the educational process through its range of exhibits and activities.

National Parent Information Network
http://npin.org/
This is a project sponsored by two ERIC clearinghouses: Urban Education at Teachers College, Columbia University; and Elementary and Early Childhood Education, University of Illinois at Urbana-Champaign. NPIN fosters the exchange of quality parenting materials. Parents and those who work with parents receive information about raising, teaching, and encouraging children to be successful. Full texts of brochures and publications for parents and those who work with parents are provided, along with materials that can be downloaded for free. This site has a question answering service, Internet resources, parent discussion lists, information specific to minorities, parenting calendar of conferences, and other events.

Partnership for Family Involvement in Education
http://pfie.ed.gov/
This is a U.S. Department of Education-sponsored site designed to help parents become more involved in their children's education. There are some great resources available at this site, many of which teachers can download and print out for free. We were pleased with the quality of the brochures, such as "Get Involved: How Parents and Families Can Help Their Children Do Better in School" and "Summer Home Learning Recipes." They are informative, easy to read, and very appropriate for sharing with parents.

The Thinking Fountain
www.sci.mus.mn.us/sln/
This is a valuable site for children interested in learning and discovering new things about science. The site is fun and easy to navigate. Parents, science teachers, and children can explore this site together and submit their own science experiments and findings.

The 21st Century Teachers Network
http://www.21ct.org
This site is part of a national volunteer effort that encourages teachers and others using educational technology to develop new skills for using technology in their teaching and learning activities. The site includes education and technology news, an event calendar, a resource library, lists of colleagues for collaboration, and information on how to join both local chapters of 21st Century Teachers and the national network itself (membership is required for access to some parts of the site).

The California Instructional Technology Clearinghouse
http://clearinghouse.k12.ca.us/
This site gives "exemplary" or "desirable" ratings to CD-ROMs for students in grades K-12 in a searchable database of more than 2,000 recommendations. With seven strands of criteria to use for searching, teachers can look for software programs that fit their specific classroom needs.

Internet Connections
www.mcrel.org/connect/integ.html
There are links to sites ranging from interactive learning pages to essays about block scheduling and planning for staff development. Teachers, parents, and students can use this index to access sites specific to their needs. Teachers can find innovative lesson plans and curricular approaches, parents can learn about classroom structuring and how it affects their children's learning, and children can access a host of interesting educational web sites.

National Staff Development Council (NSDC)
www.nsdc.org
The purpose of this council is to ensure success for all students by serving as the international network for those who improve schools and by advancing individual and organizational development. The NSDC has established national standards aimed at giving schools, districts, and states direction in what constitutes quality staff development. Its newest initiative, Results-Based Staff Development for the Middle Grades, identifies staff development programs in core content areas that have increased the achievement of middle school students.

TrackStar
http://trackstar.4teachers.org/trackstar/index.jsp
This site, links users to annotated URLs inundated with savvy, thought provoking, and fun lesson-plans. This site can be of particular use to teachers looking to innovate their curriculum with online lessons. Teachers can also guide students through the cache of information to some of their favorite subjects.

Quest Project
http://quest.arc.nasa.gov/
This site provides support and services for schools, teachers, and students seeking to fully utilize the Internet and its underlying information technologies as a basic tool for learning.

Strategies for Allocating Computers
www.ed.gov/pubs/EdReformStudies/EdTech/computer_allocation.html
This is a brief paper from the Stanford Research Institute and the U.S. Department of Education that outlines approaches for providing computers to schools, and it provides some valuable answers to the critics who question "over-technologizing" schools without direction. It also provides links to outlines of the implementation strategies of other schools and describes their allocation programs.

TechWeb: The Technology News Site
www.techweb.com/
This site has daily updated news about computer technology. The latest stories and developments on computer, network, and web technology are posted here, and the site also allows for searches on any related topic. TechWeb will return related articles published in any one of over 20 online and computer magazines.

School Technology Plan

Name of School:	**Grades**:
School Improvement Goal: (taken from your School Improvement Plan)	
Technology and Learning Strategies:	

District Instructional Technology Goals

Increase the number of staff and students who effectively and ethically use technology to:

1) communicate and collaborate
2) demonstrate new ideas, knowledge, and skills by producing high quality projects
3) research, make decisions, and problem solve

Timeline	**Activity**	**Person(s) Responsible**	**Hardware (HW), Software (SW), Tech Support (TS) Needs**	**Professional Development (PD) Needs**	**Budget Impact and Potential Funding Source(s)**	**Assessment/Evaluation Strategies and/or Tools**
	What actions will occur? What steps will be taken to achieve this goal?	*Who will provide leadership? Who will do the work? Who is accountable?*	*What HW, SW, and TS is needed to reach this goal? Include quantities and distribution.*	*What professional development is needed to complete this activity?*	*What is the cost of the additional PD, HW, SW, and TS needed to complete this activity? What revenue sources will be used?*	*How will this activity be evaluated? What measurement tools will be utilized?*
YEAR 1						
					PD: HW: SW: TS:	
					PD: HW: SW: TS:	
					PD: HW: SW: TS:	
YEAR 2						
					PD: HW: SW: TS:	

School Technology Plan						
					PD: HW: SW: TS:	
					PD: HW: SW: TS:	
YEAR 3						
					PD: HW: SW: TS:	
					PD: HW: SW: TS:	
					PD: HW: SW: TS:	

Appendix D: The Model Schools Framework

What is the Model Schools Framework? The meaningful integration of technology into the learning process is challenging, at best. While high academic achievement for students is the end goal, there are many other logistical factors that must be considered when designing a technology model for classroom learning environments in our schools:

- Original cost of procuring the equipment.
- Replacement cost of equipment in a 3-5 year cycle.
- The need and purpose for the equipment.
- The kinds of instructional practices that the equipment is intended to support or enhance.
- Professional development for teachers on the use of the equipment for instructional practices.
- The school and/or district norms and culture that are required for sound and sustained technology integration.

Technology use in Portland Public Schools is designed to align with national, state, and district standards. Oregon's innovative Quality Education Model (QEM), completed in 2000 and revised in 2002, is a tool developed to help state policymakers determine the level of resources needed to meet the mandates of the 1991 Oregon Education Act for the 21st Century and the 1994 Oregon University System (OUS) Proficiency-based Admissions Standards System (PASS). The QEM anticipated many of the requirements of the federal No Child Left Behind (NCLB) Act of 2002, which has widened the gap between current school funding and the resources needed for student success. The QEM is based on what educational research, classroom practice, professional judgment, and public values indicate are the critical parts of a quality education that will lead to high student achievement.

PPS Information Technology developed the Model Schools Framework in 2002-03 as an attempt to describe the resources necessary to integrate technology effectively into a prototype high-performing elementary, middle, or high school. It is designed to guide more purposeful and strategic acquisition of technology. Standardization of local school environments allows us to craft a comprehensive professional development plan that meets national, state, and district technology standards, confident that all instructional staff have access to core tools and resources. The Model Schools Framework will also require review and revisions consistent with planning for reconfiguring schools and other district initiatives. The framework will be adjusted to reflect the dynamic nature of technology and continuous educational improvement.

Model Elementary School

I. Staffing
   A. For schools with 1-300 students:
      1. 1 full-time Certified/Licensed Library Media Specialist
      2. 1 half-time Certified/Licensed Technology Teacher
   B. For schools with 300+ students:
      1. 1 full-time Certified/Licensed Library Media Specialist
      2. 1 full-time Certified/Licensed Technology Teacher
      3. 1 half-time Library Aide

II. Classroom Computers
   A. 1 wireless laptop computer dedicated to teacher use
   B. 4-6 multimedia desktop computers in each classroom. All computers:
      1. are networked
      2. have Internet access
      3. can print locally
      4. have file-sharing access
      5. have speakers and/or headphones
      6. have DVD – R/W
   C. Recommended – chalkboards are replaced by marker/white boards
   D. 1 digital projector
   E. 1 document camera
   F. 1 TV and VCR/DVD player

III. Library Media Center
   A. Web-based library automation system
   B. 30-35 multimedia desktop computers. All computers:
      1. are networked
      2. have Internet access
      3. can print locally
      4. have file-sharing access
      5. have speakers and/or headphones
      6. have DVD – R/W
   C. 1 wireless laptop computer dedicated to library media specialist use
   D. 1 digital projector
   E. 1 Document camera
   F. 1 networked Laser Printer
   G. 1 networked Color Printer
   H. 1 TV and VCR/DVD player
   I. 1 flatbed scanner
   J. 1 copier
   K. For check-out:
      1. 2 digital still cameras
      2. 2 digital video cameras
      3. 1 set of digital probes
      4. 15 digital microscopes
      5. 1 mobile computer lab:
         a. 16 wireless laptops
         b. 1 cart
         c. 1 digital projector
         d. 1 wireless access point

IV. School Computer Lab
    A. 30-35 desktop computers. All computers:
        1. are networked
        2. have Internet access
        3. can print locally
        4. have file-sharing access
        5. have speakers and/or headphones
        6. have DVD – R/W
    B. 1 networked laser printer
    C. 1 flatbed scanner
    D. 1 projector
    E. 1 document camera

Model Middle School

I. Staffing
    A. For schools with 1-500 students:
        1. 1 full-time, Certified/Licensed Library Media Specialist
        2. 1 half-time Library Aide
        3. 1 full-time Certified/Licensed Technology Teacher
        4. 1 half-time Technology Support Person
    B. For schools with 500+ students:
        1. 1 full-time Licensed Library Media Specialist
        2. 1 full-time Library Aide
        3. 1 full-time Certified/Licensed Technology Teacher
        4. 1 full-time Technology Support Person
II. Classroom Computers
    A. 1 wireless laptop computer dedicated to teacher use
    B. 4-6 multimedia desktops computers in each classroom. All computers:
        1. are networked
        2. have Internet access
        3. can print locally
        4. have file-sharing access
        5. have speakers and/or headphones
        6. have DVD – R/W
    C. 1 digital projector
    D. 1 document camera
    E. 1 TV and VCR/DVD player
III. Library Media Center
    A. Web-based library automation system
    B. 30-35 multimedia desktop computers. All computers:
        1. are networked
        2. have Internet access
        3. can print locally
        4. have file-sharing access
        5. have speakers and/or headphones
        6. have DVD – R/W
    C. 1 wireless laptop computer dedicated to library media specialist use
    D. 1 SmartBoard
    E. 1 digital projector

F. 1 opaque-digital projector
G. 1 networked Laser Printer
H. 1 networked Color Printer
I. 1 TV with VCR/DVD player
J. 1 flatbed scanner
K. 1 copier
L. For check-out:
    1. 4 digital still cameras
    2. 4 digital video cameras
    3. 1 mobile computer lab (2 for schools over 500 students)
        a. 16 wireless laptops
        b. 1 cart
        c. 1 digital projector
        d. 1 wireless access point
    4. 1 mobile digital video lab (2 for schools over 500 students)
        a. 5 wireless laptops w/DVD-R/W
        b. 3 digital still cameras
        c. 2 digital video cameras
        d. 2 external microphones
        e. 1 tripod
        f. 1 wireless access point
        g. 1 digital projector
        h. 1 firewire hard drive
        i. 1 cart
    5. 1 mobile data collection computer lab
        a. 10 wireless laptops
        b. 1 set of digital probes
        c. 15 digital microscopes
        d. 20 handheld devices

IV. 2 School Computer Labs
A. 30-35 desktop computers. All computers:
    1. are networked
    2. have Internet access
    3. can print locally
    4. have file-sharing access
    5. have speakers and/or headphones
    6. have DVD – R/W
B. 1 networked laser printer
C. 1 flatbed scanner
D. 1 digital projector
E. 1 Document Camera

Model High School

I. Staffing
   A. For schools with up to 1000 students:
      1. 1 full-time Certified/Licensed Library Media Specialist
      2. 1 full time Library Aide
      3. 1 full-time Certified/Licensed Technology Teacher
      4. 1 full-time Technology Support Person
      5. 1 half-time Textbook Clerk
   B. For schools with 1000+ students:
      1. 1 full-time Certified/Licensed Library Media Specialist,
      2. 1full-time Library Aide
      3. 1 full-time Certified/Licensed Technology Teacher
      4. 2 full-time Technology Support Persons
      5. 1 full-time Textbook Clerk

II. Classroom Computers
   A. 1 wireless laptop computer dedicated to teacher use
   B. 1 multimedia desktop computer in each classroom. Computer:
      1. is networked
      2. has Internet access
      3. prints locally
      4. has file-sharing access
      5. has speakers
      6. has DVD – R/W
   C. 1 digital projector
   D. 1 document camera
   E. 1 TV and VCR/DVD player

III. Library Media Center
   A. Web-based library automation system
   B. 35-40 multimedia desktop computers. All computers:
      1. are networked
      2. have Internet access
      3. can print locally
      4. have file-sharing access
      5. have speakers and/or headphones
      6. have DVD – R/W
   C. 1 wireless laptop computer dedicated to library media specialist use
   D. 1 SmartBoard
   E. 1 digital projector
   F. 1 document camera
   G. 1 networked laser printer
   H. 1 networked color printer
   I. 1 TV with VCR/DVD combo
   J. 1 flatbed scanner
   K. 1 copier
   L. For check-out:
      1. 4 digital still cameras
      2. 4 digital video cameras
      3. 1-2 mobile computer lab(s) (One lab for schools 1-500 students, two labs for schools with more than 500 students)

a. 16 Laptops
b. 1 cart
c. 1 Projector
d. 1 wireless access point

4. 1-3 mobile digital video lab(s) (One for schools with 1-500 students, two for schools with 500-1000 students, and three for schools with over 1000 students.)
    a. 5 wireless laptops w/DVD-R/W
    b. 3 digital still cameras
    c. 2 digital video cameras
    d. 2 external microphones
    e. 1 tripod
    f. 1 wireless access point
    g. 1 digital projector
    h. 1 firewire hard drive
    i. 1 cart
5. 1-2 mobile data collection computer lab(s) (One for schools with 1-1000 students, and two for schools with 1000+)
    a. 10 wireless laptops
    b. 1 set of digital probes
    c. 15 digital microscopes
    d. 20 handheld devices
6. 1 class set of 50 handheld devices

IV. 8-10 School Computer Labs
    A. 30-35 desktop computers. All computers:
        1. are networked
        2. have Internet access
        3. can print locally
        4. have file-sharing access
        5. have speakers and/or headphones
        6. have DVD – R/W
    B. 1 networked laser printer
    C. 1 flatbed scanner
    D. 1 digital projector
    E. 1 document camera

Appendix E: Information Technology Accessibility and Use

Portland Public Schools (PPS) is committed to providing equitable and just access to information technology for all students, families, staff, and community members. Accessibility must be considered when procuring, developing, or implementing information technologies (including web-based information and applications, hardware, software, multimedia), and when designing the environment.

Accessible information technology is achieved through two approaches:

Universal Design seeks to ensure that products and environments are usable by all people, to the greatest extent possible, regardless of age, ability, or situation (for more information see http://design.ncsu.edu/cud/univ_design/princ_overview.htm). Universal Design for Learning (UDL) refers to the design of instructional materials and activities that allow learning goals to be achievable by students with broad differences in their abilities to see, hear, speak, move, read, write, understand English, learn, attend to information, organize, and remember. These alternatives are built into the design of the materials, equipment, instruction, and activities – not added afterwards (for more information see http://wati.org/bestpractices/univdesign.html).

Assistive technology (AT) solutions must be considered when a student requires additional and individual accommodations/modifications. An assistive technology device is defined as "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability." (1997 Reauthorization of the Individual with Disabilities Education Act, IDEA.)

PPS endorses the following principles of accessible information technology:

- Information technology must be **perceivable**.
  Accessible technology is capable of presenting information to all users, including those who perceive content visually, audibly, and/or through touch. This includes users who may need AT solutions such as screen reading software for persons with visual impairments or reading disabilities, those who use refreshable Braille displays, or those who use closed captions.
- Information technology must be **operable**.
  Accessible technology can be operated by all users including those who are able to use a standard mouse and standard keyboard, as well as those who use AT solutions such as an alternate keyboard, alternate mouse pointing device, or speech recognition.
- Information technology must be **understandable**.
  Accessible technology is used as a tool for supporting delivery of quality education to students. Overly complex, unintuitive devices or interfaces can obstruct, rather than enhance, the learning process. Some students may benefit from AT that will enhance their comprehension of the educational material, such as including visual/auditory cues, and modification of content.
- Information technology must **robust**.
  Accessible technology is usable today and in the future in a variety of environments. Development and procurement of educational technology should ensure that information

is compatible with a variety of platforms and devices. Technology that is built according to widely recognized standards will ensure the utility and accessibility of technology in the future.

Accessible Information Technology – Guidelines

Portland Public Schools strongly endorses the Section 508 Standards for Electronic and Information Technology as developed by the United States Access Board (http://www.access-board.gov/sec508/guide). The Section 508 Standards should be referenced as the Portland Public Schools accessibility standard in procurement and development activities with outside vendors. The following set of internal guidelines is informed by the Section 508 Standards and describes key requirements for accessible information technology within the Portland Public Schools environment.

Web-based information and services:

- Must provide alternate text for all graphic content (e.g., the ALT attribute in HTML) in order to provide access to users who perceive content through non-visual means such as screen readers.
- Must avoid using color as the sole means of communicating information, so that people who are blind or color blind can still access the information.
- Must avoid using flashing content, as it may cause seizures in susceptible users.
- Must be operable using the standard mouse and keyboard or the keyboard alone.
- Must be compatible with the users AT.

Hardware to be purchased, acquired, or assembled by PPS:

- Computers must be compatible with users AT by supporting a variety of secondary devices intended to support individuals with disabilities (i.e., alternate keyboards and mouse input devices, key guards, switch interfaces, scanners).
- Standard interface ports must be provided that will allow for the attachment of these secondary devices.
- Other hardware devices such as copy machines and printers must be physically accessible to and operable by all users.

Software to be developed, purchased, or acquired by PPS:

- Must provide a text equivalent for all graphic content in order to provide access to users who perceive content through non-visual means such as screen readers.
- Must provide a text equivalent for all audible content including captioned video.
- Must avoid using color as the sole means of communicating information, so that people who are blind or color blind can still access information.
- Must be operable using the standard mouse and keyboard or the keyboard alone.

Multimedia presentation to be developed, purchased, or acquired by PPS:

- For audio content, a transcript must be provided for users who are unable to hear the content.
- For audio/visual content, the content must be captioned in order to provide a text equivalent in which the audio portion of the message is synchronized with the visual portion of the message.
- For audio/visual content, information that is presented visually that is not clear from the audio must be clearly described so that users who are unable to see the visual content still

have access to the information that is being communicated. An alternative format must be provided to users who are unable to see the visual content.
- Must be operable using the standard mouse and keyboard or the keyboard alone.

Environments specific to information technology:
- Furniture must have appropriate dimensions for all users, with consideration for those individuals who require adjustable table, seat height, etc.
- Must take into account ergonomic principles.
- Must have electrical outlets in appropriate location for all users.
- All users must have physical access to peripheral hardware such as scanners and printers.
- Must be accessible to all students including those in wheelchairs, those who use walking aids, and those who are sensitive to light and glare from computer monitor.

(More information can be found at Ergonomics for Children & Educational Environments (ECEE): http://www.education.umn.edu./kls/ecee.)

Special Situations–Undue Burden and Non-availability:
The following circumstances may qualify as exemptions from this policy:
- Extreme difficulty or expense (Undue Burden). The conclusion that compliance is unduly burdensome is an institutional decision to be made only in the consultation with the Office of Affirmative Action and Equal Opportunity.
- Hardware or software for which no equivalent accessible option is available (Non-availability).

Undue burden means significant difficulty or expense. In determining whether an action would result in an undue burden, an agency shall consider all agency resources available to the agency or components for which the product is being developed, procured, maintained, or used. When undue burden is encountered, disability law still applies and the educational activity must still be accessible. Auxiliary aids and services, an alternative assignment, or other accommodations must be considered.

PPS Internet Safety Policies and CIPA

The Children's Internet Protection Act (CIPA), enacted December 21, 2000, requires recipients of federal technology funds to comply with certain Internet filtering and policy requirements. Schools and libraries receiving funds for Internet access and/or internal connection services must also meet the Internet safety policies of the Neighborhood Children's Internet Protection Act (NCIPA) that addresses the broader issues of electronic messaging, disclosure of personal information of minors, and unlawful online activities.

It is the policy of Portland Public Schools to: (a) prevent user access over its computer network to, or transmission of, inappropriate material via Internet, electronic mail, or other forms of direct electronic communications; (b) prevent unauthorized access and other unlawful online activity; (c) prevent unauthorized online disclosure, use, or dissemination of personal identification information of minors; and (d) comply with the Children's Internet Protection Act [Pub. L. No. 106-554 and 47 USC 254(h)].

CIPA Definition of Terms:

TECHNOLOGY PROTECTION MEASURE. The term "technology protection measure" means a specific technology that blocks or filters Internet access to visual depictions that are:

1. OBSCENE, as that term is defined in section 1460 of title 18, United States Code;
2. CHILD PORNOGRAPHY, as that term is defined in section 2256 of title 18, United States Code; or
3. Harmful to minors.

HARMFUL TO MINORS. The term "harmful to minors" means any picture, image, graphic image file, or other visual depiction that:

1. Taken as a whole and with respect to minors, appeals to a prurient interest in nudity, sex, or excretion;
2. Depicts, describes, or represents, in a patently offensive way with respect to what is suitable for minors, an actual or simulated sexual act or sexual contact, actual or simulated normal or perverted sexual acts, or a lewd exhibition of the genitals; and
3. Taken as a whole, lacks serious literary, artistic, political, or scientific value as to minors.

SEXUAL ACT; SEXUAL CONTACT. The terms "sexual act'" and "sexual contact" have the meanings given such terms in section 2246 of title 18, United States Code.

Access to Inappropriate Material

To the extent practical, technology protection measures (or "Internet filters") shall be used to block or filter Internet, or other forms of electronic communications, access to inappropriate information. Specifically, as required by the Children's Internet Protection Act, blocking shall be applied to visual depictions of material deemed obscene or child pornography, or to any material deemed harmful to minors. Subject to staff supervision, technology protection measures may be disabled or, in the case of minors, minimized only for bona fide research or other lawful purposes.

Inappropriate Network Usage
To the extent practical, steps shall be taken to promote the safety and security of users of the Portland Public Schools online computer network when using electronic mail, chat rooms, instant messaging, and other forms of direct electronic communications. Specifically, as required by the Children's Internet Protection Act, prevention of inappropriate network usage includes: (a) unauthorized access, including so-called 'hacking,' and other unlawful activities; and (b) unauthorized disclosure, use, and dissemination of personal identification information regarding minors.

Supervision and Monitoring
It shall be the responsibility of all members of the Portland Public Schools staff to supervise and monitor usage of the online computer network and access to the Internet in accordance with this policy and the Children's Internet Protection Act. Procedures for disabling or otherwise modifying any technology protection measures shall be the responsibility of the PPS Office of Information Technology or designated representatives.

PPS Internet Safety Resources and Support Plan
PPS Information Technology has been working with PPS Student Services, Security Services, and the PPS Professional Library and other school librarians since November 2005 in order to combine our efforts to educate the community about Internet Safety: Privacy and the Internet, Cyber Relationships, Intellectual Property, Malicious Code, Cyber Citizenship, Social Issues, Pornography on the Web, and Cyber Harassment; and to identify and distribute relevant teaching materials and resources.

Current District Resources:

1. School-Based
    - Media Specialist – contact the information literacy/media literacy/Internet safety experts on your campus. Consider having them present to your staff and educate the parents and students.
    - Counselor or other mental health professionals to address bullying aspects of Internet Safety.
2. District-Level
    - Professional Library (916-3267, proflib@pps.k12.or.us) to present topics related to Information Literacy/Media Literacy.
    - Student Services (916-5460, pwilson@pps.k12.or.us) to present topics related to Bullying and Internet Safety.
    - EdTech TOSAS (916-3023, jkeuter@pps.k12.or.us) to present an overview of the Internet Safety Information listed here.
    - Security Services, sjunglin@pps.k12.or.us .
    - Resources (curriculum, brochures): http://159.191.14.139/.docs/pg/10717

We recognize the need to protect the online experience of our students. Following are the mechanisms currently in place for PPS:

Acceptable Use Regulation (AUR): The district has an Acceptable Use Regulation (AUR) that is slated to be reviewed and updated in summer 2006. A draft of this updated AUR is attached on the following pages. In order to have a district email account users must sign and agree to the

terms. The AUP is included in every registration packet. Sample copies of AUP information sheets are attached. (http://inside.pps.k12.or.us/techhelp/aur/aur.php.)

Parent Permission: On the registration form under Permissions/Authorizations, parents are asked to check whether "My child has permission to use the Internet. Yes/No." Additionally, next to this is printed, "The student's use of the Internet is subject to the PPSNet Acceptable Use Regulation, which is in the Registration Packet and is available from your school."

District/MESD Filters: The MESD runs the filters for PPS. Objectionable sites are referred by the IT Help Desk to the MESD for "adult content."

Information Literacy: All of the high schools, 85% of the middle schools and 30% of the elementary schools have licensed media specialists who are trained to work with students, teachers, and parents on the topic of Internet Safety. The media specialists meet monthly with the district professional librarians.

Near-Future Resources:

1. Online Safety Quiz: A pop-up window will instruct users to answer Internet use/safety questions correctly when logging into their accounts for the first time each school year.
2. Fifteen-minute presentation to school administrators at the regularly scheduled PPS Area Directors' Meeting.
3. Brochures for parents in fall registration packets
4. Scripted assembly for students
5. Scripted parent meeting

Portland Public Schools

Acceptable Use Policy (AUP) for District Computer Systems
Information for Parents and Students

The District's Acceptable Use Policy ("AUP") (set forth through Board Policy 8.60.040-P) is to prevent unauthorized access and other unlawful activities by users online, prevent unauthorized disclosure of or access to sensitive information, and to comply with the Children's Internet Protection Act ("CIPA"). As used in this policy, "user" includes anyone using the computers, Internet, email, chat rooms and other forms of direct electronic communications or equipment provided by the District (the "network."). **Only current students or employees are authorized to use the network.** The District sponsors and owns the network. The network is not a forum for expressive activities. The network is intended for educational and administrative purposes as defined in Board Policy 8.60.040.

The District will use technology protection measures to block or filter, to the extent practicable, access of visual depictions that are *obscene*, *pornographic*, *and harmful to minors* over the network. The District reserves the right to monitor users' online activities and to access, review, copy, and store or delete any electronic communication or files and disclose them to others as it deems appropriate and in compliance with any applicable law. Use of the District network constitutes consent to monitor. Users should have no expectation of privacy regarding their use of District property, network and/or Internet access or files, including email.

Acceptable Uses of the PPS Computer Network or the Internet

Once the student acknowledges they have read and understand the PPS Acceptable Use Policy, the conditions for use remain in effect until revoked by the parent, or the student loses the privilege of using the District's network due to a violation of this policy or is no longer a PPS student. All network users are expected to follow this policy and report any misuse of the network or Internet to a teacher, or other appropriate District personnel. Access to our electronic network has been established for educational use only, including support of administrative and student services, student and staff research, lesson planning, collaboration and sharing of ideas, contact with teachers and support staff, and the downloading of materials to be used as educational resources. **By using the network, users have agreed to this policy.** If a user is uncertain about whether a particular use is acceptable or appropriate, he or she should consult a teacher, supervisor or other appropriate District personnel.

Unacceptable Uses of the Computer Network or Internet

• Violating any state or federal law or municipal ordinance, such as: Accessing or transmitting pornography of any kind, obscene depictions, harmful materials, materials that encourage others to violate the law, confidential information or copyrighted materials.

• Selling or purchasing illegal items or substances.

• Obtaining and/or using anonymous email sites; spamming; spreading viruses; or malicious software (malware).

• Causing harm to others or damage to their property, such as:

1. Using profane, abusive, or impolite language; threatening, harassing, bullying or making damaging or false statements about others or accessing, transmitting, or downloading offensive, harassing, or disparaging materials;
2. Deleting, copying, modifying, or forging other users' names, emails, files, or data; disguising one's identity, impersonating other users, or sending anonymous email;
3. Damaging computer equipment, files, data or the network in any way, including intentionally accessing, transmitting or downloading computer viruses or other harmful files or programs, or disrupting any computer system performance;

4. Using any District computer to pursue "hacking," internal or external to the District, or attempting to access information protected by privacy laws; or
5. Accessing, transmitting or downloading large files, including "chain letters" or any type of "pyramid schemes".

• Engaging in uses that jeopardize access or lead to unauthorized access into others' accounts or other computer networks, such as:

1. Using another's account password(s) or identifier(s);
2. Interfering with other users' ability to access their account(s); or
3. Disclosing anyone's password to another or allowing a person to use another user's account(s).
4. Providing your account information to others, or making your account readily accessible.

• Using the network or Internet or the network for commercial purposes:

1. Using the Internet for personal financial gain;
2. Using the Internet for personal advertising, promotion, or financial gain; or
3. Using the network to conduct for-profit business activities and/or engage in non-government related fundraising or public relations activities such as solicitation for religious purposes, lobbying for personal political purposes.

• Using the network or Internet in any manner that violates any District or school rule or policy, including, without limitation any rule or policy in the District's Handbook on Student Responsibilities Rights and Discipline.

Student Internet Safety

1. Students under the age of eighteen should only access the network accounts outside of school if a parent or legal guardian supervises their usage at all times. The student's parent or guardian is responsible for monitoring the minor's use;
2. Students shall not reveal on the Internet personal information about themselves or other persons. For example, students should not reveal their name, home address, telephone number, or display photographs of themselves or others;
3. Students shall not engage in bullying, harassment, or flaming;
4. Students shall not meet in person anyone they have met only on the Internet; and
5. Students must abide by all laws, this Acceptable Use Policy and all District security policies.

Penalties for Improper Use

The use of a District account is a privilege, not a right, and misuse will result in the restriction or cancellation of the account. Misuse may also lead to other disciplinary and/or legal action for both students and employees, including suspension, expulsion, dismissal from District employment, or, in the case of a student from school, or criminal prosecution by government authorities. The District will attempt to tailor any disciplinary action to meet the specific concerns related to each violation.

Disclaimer

The District makes no guarantees about the quality of the services provided and is not responsible for any claims, losses, damages, costs, or other obligations arising from use of the network or accounts. Any additional charges a user accrues due to the use of the District's network are to be borne by the user. The District also denies any responsibility for the accuracy or quality of the information obtained through user access. Any statement, accessible on the computer network or the Internet, is understood to be the author's individual point of view and not that of the District, its affiliates, or employees.

I have read, understand, and agree to abide by the provisions of the Acceptable Use Policy of Portland Public Schools.

Portland Public Schools

Acceptable Use Policy (AUP) for District Computer Systems
Information for Employees

The District's Acceptable Use Policy ("AUP") (set forth through Board Policy 8.60.040-P and 8.60.040-AD) is to prevent unauthorized access and other unlawful activities by users online, prevent unauthorized disclosure of or access to sensitive information, and to comply with the Children's Internet Protection Act ("CIPA"). As used in this policy, "user" includes anyone using the computers, Internet, email, chat rooms and other forms of direct electronic communications or equipment provided by the District (the "network."). **Only current students or employees are authorized to use the network.** The District sponsors and owns the network. The network is not a forum for expressive activities. The network is intended for educational and administrative purposes as defined in Board Policy 8.60.040.

The District will use technology protection measures to block or filter, to the extent practicable, access of visual depictions that are *obscene, pornographic, and harmful to minors* over the network. The District reserves the right to monitor users' online activities and to access, review, copy, and store or delete any electronic communication or files and disclose them to others as it deems appropriate and in compliance with any applicable law. Users should have no expectation of privacy regarding their use of District property, network and/or Internet access or files, including email.

Acceptable Uses of the PPS Computer Network or the Internet

Once the employee acknowledges they have read and understand the PPS Acceptable Use Policy, the conditions for use remain in effect until revoked by the district or termination of employment.. Employees and other users are required to follow this policy. All users must follow this policy and report any misuse of the network or Internet to their supervisor or other appropriate District personnel. Access to our electronic network has been established for educational use only, including support of administrative and student services, student and staff research, lesson planning, collaboration and sharing of ideas, contact with subject-area specialists, and the downloading of materials to be used as classroom resources. Staff may use the Internet, for incidental personal use during duty-free time**. By using the network, users have agreed to this policy.** If a user is uncertain about whether a particular use is acceptable or appropriate, he or she should consult your principal, supervisor or other appropriate District personnel prior to using the network.

Unacceptable Uses of the Computer Network or Internet

• Violating any state or federal law or municipal ordinance, such as: Accessing or transmitting pornography of any kind, obscene depictions, harmful materials, materials that encourage others to violate the law, confidential information or copyrighted materials.

• Selling or purchasing illegal items or substances.

• Obtaining and/or using anonymous email sites; spamming; spreading viruses.

• Causing harm to others or damage to their property, such as:

1. Using profane, abusive, or impolite, suggestive, inappropriate, unprofessional language; threatening, harassing, or making damaging or false statements about others or accessing, transmitting, or downloading offensive, harassing, or disparaging materials;
2. Deleting, copying, modifying, or forging other users' names, emails, files, or data; disguising one's identity, impersonating other users, or sending anonymous email;
3. Damaging computer equipment, files, data or the network in any way, including intentionally accessing, transmitting or downloading computer viruses or other harmful files or programs, or disrupting any computer system performance;

4. Using any District computer to pursue "hacking," internal or external to the District, or attempting to access information protected by privacy laws; or
5. Accessing, transmitting or downloading large files, including "chain letters" or any type of "pyramid schemes".

• Engaging in uses that jeopardize access or lead to unauthorized access into others' accounts or other computer networks, such as:

1. Using another's account password(s) or identifier(s);
2. Interfering with other users' ability to access their account(s); or
3. Disclosing anyone's password to another or allowing a person to use another user's account(s).
4. Providing account information to others allowing or allowing student access to sensitive data

• Using the network or Internet for commercial purposes:

1. Using the Internet or the network for personal financial gain;
2. Using the Internet or the network for personal advertising, promotion, or financial gain; or
3. Using the network to conduct for-profit business activities and/or engage in non-government related fundraising or public relations activities such as solicitation for religious purposes, lobbying for personal political purposes.

Penalties for Improper Use

The use of a District account is a privilege, not a right, and misuse will result in the restriction or cancellation of the account. Misuse may also lead to other disciplinary and/or legal action for both students and employees, including suspension, expulsion, dismissal from District employment, or criminal prosecution by government authorities. The District will attempt to tailor any disciplinary action to meet the specific concerns related to each violation.

Disclaimer

The District makes no guarantees about the quality of the services provided and is not responsible for any claims, losses, damages, costs, or other obligations arising from use of the network or accounts. Any additional charges a user accrues due to the use of the District's network are to be borne by the user. The District also denies any responsibility for the accuracy or quality of the information obtained through user access. Any statement, accessible on the computer network or the Internet, is understood to be the author's individual point of view and not that of the District, its affiliates, or employees.

I have read, understand, and agree to abide by the provisions of the
Acceptable Use Policy of Portland Public Schools.

Appendix F: ISTE Assessment Results for Portland Public Schools

Technology Profile and Action Plan for Improvement

Prepared on 3/30/2006 for: Jay Keuter, Portland Public Schools

Overall Result Summary:

According to the Technology Support Index (TSI) your system is considered "*Satisfactorily Efficient,*" requiring limited improvements.

The "Satisfactory Efficiency" level of development refers to a system that is doing a very good job of support in many areas. Improvements in a number of areas will enhance the organizational capacity to effectively implement technology.

Following is your technology profile and action plan for improvement, by domain:

Equipment Standards

	Low Efficiency	Moderate Efficiency	Satisfactory Efficiency	High Efficiency	Impact
Cycling of Equipment	No, we do not have a replacement cycle.	***Yes, we replace computers every 5-7 years.***	Yes, we replace computers every 4-5 years.	Yes, we replace computers every 3 years.	Significant - Requires a strategic organizational and financial commitment
Brand Selection	The brand purchased is up to the individual school.	There is a brand recommendation list, but I am able to easily purchase non-standard equipment AND the brand changes frequently.	There is a brand recommendation list with 1-2 brands, but I am able to easily purchase equipment that is not on the list.	***We have 1-2 specific brands that we purchase over a multi-year period. All purchases are made from that brand.***	Neutral - Savings can be gained with multiple year contracts.
Model Selection	We can select any model within a brand or manufacturer.	A model line is defined, but many choices are provided in that line.	There are 3-5 models that we can select from for purchase.	***Specific models from a brand are defined and are limited one or two models with few variations.***	Neutral
Platform	Two or more platforms are supported in the district, and in any given school individuals are given platform choice and multiple platforms are found.	Two or more platforms are supported in the district, but platform decisions are made at the school level and most equipment at any given school is one platform.	***Two platforms are supported in the district, but one platform is predominantly used with a second platform limited to specific program areas or instructional applications.***	Only one platform is allowed regardless of application or impact.	Neutral - Savings can be gained with a single platform
Standard Operating System (OS)	Four or more with all operating systems supported.	Three, with older equipment either migrated or not supported.	***Two, with most equipment migrated to the most recent OS.***	One, with all equipment migrated to the standard OS.	Moderate - Keeping a consistent OS with new purchases has no cost implications. Migrating existing machines to a current operating system can have moderate costs to purchase the new OS and upgrading hardware to run it.
Application Software Standard	A supported software list has not been adopted, and users can install any software.	***Users are able to install titles that are not on the district list, and will receive limited support.***	Users are able to install titles that are not on the district list, but will not receive any support.	A software application list has been adopted and only those software titles on the list are permitted on school computers.	Neutral
Donated Equipment	We accept any donated equipment.	***Equipment is accepted if it meets minimum performance requirements. Brands and age are variable.***	Equipment is accepted if it meets specific performance requirements, is less than three years old,	Equipment is accepted if it meets specific brand, model, and performance requirements and is	Neutral

			and matches the brand(s) of the district.	less than two years old. Cash donations are encouraged instead of equipment.	
Granted Equipment	All granted equipment is accepted.	Grant equipment is accepted regardless of brand and specification, but the district is consulted about standards.	***The technology department approves grants involving technology equipment before they are submitted, and standardization is encouraged but is not consistently enforced***	All equipment from grants must meet district brand and performance specifications or it is not allowed.	Neutral
Peripheral Standards	No peripheral standards are set.	***Peripherals are standardized by brand, but models within the brand are not and the list changes frequently.***	Peripherals are standardized by brand, but many models are allowed and are typically consumer rated.	All equipment is standardized on a small number of brands and models with equipment that is rated for industrial/school use.	Minimal - Industrial versions of peripherals are more costly, but are typically balanced with longevity and reduced support costs.
Surplus Practice	Surplus equipment is used until it is no longer functional and is supported.	Surplus equipment is supported by district personnel, but as a low priority.	***Surplus equipment is no longer supported by district personnel, but can be used by schools.***	Surplus equipment is taken out of service when it reaches the replacement age, even if it still works.	Neutral
Break/Fix Agreements (Warranties)	No additional warranties are pursued beyond the standard warranty (1 year).	Extended warranties are purchased for computers only but don't cover the life of the equipment and doesn't include peripherals (3 years, computers only).	***Extended warranties are purchased in addition to the standard warranty on computers and peripherals but don't cover the life of the equipment (3 years, all equipment).***	Warranties are purchased to cover the life of the equipment (5 or more years).	Moderate to High - Warranties beyond 3 years can be expensive
Security Procedures	Security guidelines are loosely defined or do not exist resulting in substantial vulnerabilities.	Fairly secure guidelines are in place but are not closely followed.	Fairly secure guidelines are in place and followed, but more stringent guidelines would provide a more secure environment (e.g. password rotations, etc.).	***Very secure guidelines and practices are in place and are consistently practiced including limited administrative access to machines, password rotations, and "strong" passwords (letters and numbers)***	Neutral - Most organizations have security tools at their disposal, but often under utilize them.
Security Hardware and Software	No firewall or software security standards are in place.	***A firewall is in place but ports are commonly opened. Software security standards are limited to promises by the vendor with limited auditing activities***	A firewall is in place with some opening of ports. Software security audits are in place for major systems with periodic security audits.	A firewall is in place and opening of ports is very limited. Software security standards are in place for all software along with periodic security audits.	Minimal to Moderate

Domain Result Summary: According to the TSI your Equipment Standards (Domain 1) is considered "Moderately Efficient" requiring attention and improvement. The "Moderate Efficiency" level of development refers to a system that has some areas of excellence, but typically isolated and limited in implementation. While there is some good support in place, improvement will be required to overcome technology challenges

Recommendation: The support costs for technology equipment rise exponentially when it is left in service beyond its normal expected life. Most school districts continue investing in older technology equipment even at extraordinary cost and limited capability because a systematic replacement cycle has not been adopted. An adopted cycle (3-5 years), either through equipment leasing or by purchase and replace is recommended for your school district.

Cost: Significant

Resources: School districts committed to the use of technology are adopting replacement cycles to avoid obsolescence. Lake Washington School District (www.lkwash.wednet.edu) adopted a 5-year cycle and 4:1 student to computer ratio for their entire district. Tucson Unified School District (www.tusd.k12.az.us) adopted a replacement cycle through a leasing program called Eduflex replacing all equipment every 3 years (www.compaq.com/education/k12/success/tucsonunified.html). Most manufacturers (e.g., www.compaq.com, www.apple.com) offer leasing programs.

Recommendation: Decades of funding issues in schools has created a culture that uses every resource to the very end of its life. Unfortunately with technology when equipment has reached the end of its reasonable life it begins to cost the district enormous resources to keep it in service. Even if no support is provided, staff time for troubleshooting and other indirect resources are substantial. Like textbooks that are replaced and surplussed on a cycle, technology should be surplussed after its usable life even if the equipment may still work. This strategy can be challenging for districts that have a culture of extreme frugality or do not have an adopted upgrade cycle.

Cost: Neutral

Recommendation: In many organizations up to 25% of the supported technology devices may be peripherals (printers, digital cameras, scanners, etc.). Even with strong computer standards, peripheral standards are required to minimize support challenges. This is especially true of

peripherals that are accessed on the network (printers). It is recommended that peripheral standards are put into place with limited models so that effective support can be provided. Further, consumer products that are not designed for an enterprise networked environment should be discouraged.
Cost: Minimal
Recommendation: Every software application introduces a new set of variables for support personnel. In addition to application functionality, each software application interacts with the operating system and all of the features of the district's technology solution. Each application that is used should be tested before it is introduced for full deployment. A list of tested applications and the known issues should be made available to users. To completely contain technical issues, installation of applications that are not on the list should not be permitted.
Cost: Neutral
Recommendation: Every operating system has its own set of advantages and disadvantages, along with technical requirements for operating effectively and efficiently. When multiple operating systems are supported in a district, the knowledge base required is greater, and troubleshooting becomes more challenging. Most technical issues are related either to hardware or operating system issues. As such, limiting the number of operating system versions in district is highly recommended.
Cost: Moderate

Staffing and Processes

	Low Efficiency	Moderate Efficiency	Satisfactory Efficiency	High Efficiency	Impact
Organizational Structure	The technology support comes from multiple points within the organization, and reporting is not functionally logical. Cross-functional collaboration is difficult or non-existent.	The reporting structures are difficult to identify, and direction comes from multiple points in the organization. Cross-functional collaboration exists.	The technical support functions and instructional technology functions report differently, but each unit is cohesively organized and there is effective communication between units.	***All of the technology functions report through the same unit in the organization, providing for a logical chain of command and communication structures.***	Neutral
Contracted Primary Support	No, outside support is not used as the primary support strategy in the district	***Yes, support is contracted out, but the performance specification is written to personnel minimums, not a performance contract.***	Yes, all support is contracted out and written to a performance specification requiring no more than a 5 day turn around on technical issues.	Yes, all support is contracted out and written to a performance specification requiring no more than a 72-hour turn around on technical issues.	High
Contracted Supplemental Support	No, contracted support is not used.	Yes, contracted support is used for emergencies but is not built in as a planned strategic support strategy.	Yes, contracted support is used as a part of the overall strategy but has not been closely evaluated to determine the most strategic places to use this support.	***Yes contracted support is used strategically as a part of the overall strategy for complex problems or in areas where savings/efficiencies can be easily realized.***	Moderate
Staffing to Computer Ratio	***Our computer to technician ratio is over 250:1.***	Our computer to technician ratio is between 150:1 and 250:1.	Our computer to technician ratio is between 75:1 and 150:1.	Our computer to technician ratio is less than 75:1.	High
Formula-Driven Technology Staffing	Staffing formulas are not used or considered.	***Formulas for staffing are considered but are limited in scope and are not used to drive staffing.***	Comprehensive formulas have been developed considering multiple dimensions of the environment but are only used as a guide and do not drive staffing.	Comprehensive formulas have been developed and drive staffing as a normal part of operations. Formulas include multiple dimensions of the environment.	Moderate to High - Depending upon the nature of the formula, over time additional staffing is typically generated unless the desired computer penetration has been accomplished.
Certification of Technical Staff	Certification is not a priority in the organization and concerns are raised about time away from the job to pursue certification.	***Technical staff are encouraged to become certified, but no support is provided toward certification.***	Some technical staff is certified in appropriate areas, others are involved in district-supported programs toward certification.	Most technical staff is certified in appropriate areas (e.g., Cisco, MCSE, etc.). New certification is encouraged and supported.	Minimal to Moderate
Differentiated Job Descriptions	Technical support employees do it all; redundancies and inefficiencies are	Technical support employees do it all, but redundancies are not created due to small	***Some differentiation in jobs has occurred, although assignments are not provided based***	Job descriptions are fully differentiated creating specialization and efficiencies, and a	Neutral

	created as a result.	size and/or staffing levels.	***upon skill-set competencies.***	clear avenue for support.	
Technician Retention	Technical staff turnover is very high; employee satisfaction is low.	Technical staff turnover is high due to other employment opportunities; employee satisfaction is fair.	***Technical staff turnover is moderate (excluding retirement); employee satisfaction is high.***	Technical staff turnover is very low (excluding retirement); employee satisfaction is very high.	Minimal
Competitive Compensation	Technical positions are poorly competitive, offering compensation in the bottom 50% of equivalent positions in the area.	***Technical positions are moderately competitive, offering compensation in the 50th to 75th percentile of equivalent organizations in the area.***	Technical positions are competitive, offering compensation in the 75th to 90th percentile of equivalent organizations in the area and offer competitive non-compensation benefits.	Technical positions are very competitive; offering compensation in the 90th percentile of equivalent organizations in the area and, in some cases, compete with private businesses for talent.	Moderate to High
Escalation Process for Technical Issues	No escalation process is in place, and the path for resolution is unclear.	A clear path for resolution is in place, but no escalation process is recognized.	***An escalation process is in place with two steps of escalation, and significant crossover between levels.***	A well-defined escalation process is in place, with three or more steps of escalation, and a clear path for resolution.	Minimal
HelpDesk	No HelpDesk support is provided.	A HelpDesk is provided for staff but is not fully staffed. The HelpDesk is used for emergencies only and is not used as first line of defense.	***A central HelpDesk is in place, but the organizational culture has not adopted the HelpDesk systemically.***	A central HelpDesk is in place with trained HelpDesk staff, and a culture of using the HelpDesk as the first line of defense is pervasive.	Minimal to Moderate
Use of Online Knowledgebase for Technical Help	Staff seeks no online help due to both availability of resources and district culture.	***Some staff seeks online help, but the behavior is not pervasive and resources are limited.***	Many staff seek online help, but not as a first line of defense.	Most staff seeks help from an online knowledgebase as their first line of defense for most issues.	Minimal to Moderate
Software Support Protocols and Standards	***No list of supported software is provided for users.***	***A list of supported software is provided, but no differentiated processes are provided for limited support products.***	A list of supported software is provided with differentiated processes, however users and staff do not follow them closely.	A list of supported software is provided, with clear differentiated processes for each set of software that are consistently used.	Neutral
New Equipment Deployment	The local school staff is responsible for the deployment of new equipment.	The regular technical staff manages all aspects of new equipment deployment resulting in a reduction in regular service.	Additional help (internal or by contract) is utilized for imaging and tagging of new equipment, but setup is the responsibility of the regular technical staff creating some delays in regular technical service.	***Additional help (internal or by contract) is utilized for all aspects of new deployment resulting in no disruption to regular technical support services and the instructional program.***	Moderate
Documented Procedures	Little or no documentation exists for technical tasks, requiring users and technical staff to invent their own solutions.	Some documentation exists for technical tasks but is not widely shared or used. Most documentation is limited to few technical staff only.	***Documentation exists for technical tasks but is poorly written and is not systematically updated as procedures are developed.***	Documentation exists for most technical tasks and is used by most user groups. Well-written documentation production is a normal part of operations.	Minimal to Moderate
Support by Teachers	Teachers and librarians provide all of the technical assistance in the building.	Teachers and librarians provide much of the technical assistance in the building with release time or stipend.	***Teachers and librarians serve as the contact point, and perform some of the technical work in conjunction with technical staff.***	Teachers and librarians are used as the contact point in the building but do not perform technical support work.	Neutral
Student Support	Students provide	Students are used	***No student support is***	A curricular program is	Neutral

	support for school in an ad-hoc manner due to limited district support.	extensively, in an official capacity, and supplant district support.	***provided.***	designed to train students in technical support. They support district technology, but in a peripheral way as part of their instructional program only.	

Domain Result Summary: According to the TSI your Staffing and Processes (Domain 2) is considered "Moderately Efficient" requiring attention and improvement. The "Moderate Efficiency" level of development refers to a system that has some areas of excellence, but typically isolated and limited in implementation. While there is some good support in place, improvement will be required to overcome technology challenges
Recommendation: Certainly the most challenging (and costly) issue related to technology support in schools is staffing. Most private industries staff technical support with a technician for every 50 to 100 computers. School districts, on the other hand, will commonly see ratios of 250:1 or greater. It is recommended that technology staffing is prioritized to ensure that downtime is minimized and that staff and students can readily depend upon the district's technology.
Cost: High
Recommendation: School districts are finding that under certain circumstances completely outsourcing a function of the organization is not only desirable but preferred. By doing this, it allows the school district to concentrate on its core competency, educating children. Technical support if managed appropriately can be effectively outsourced providing an efficient and effective technology support strategy.
Cost: High
Recommendation: Unlike the business environment that supports a relatively limited number of software applications, in education there are hundreds of titles. In today's environment it is impossible to fully support every product. It is important to establish guidelines for support that will help guide in the purchase of software, and will establish reasonable expectations for staff. This typically results in a list of software with different categories of support and expected action. So that support activity matches employee expectations, it is recommended that a supported software list and protocols is put into place.
Cost: Neutral
Recommendation: A large percentage of technical issues that arise are often simple in nature. In most cases, with the right information and a culture that promotes minimal troubleshooting, users can help themselves for many technical problems. An easy to use and searchable knowledgebase is critical to empower users to solve the simple problems themselves. The more effective knowledgebase implementations are those that grow with the organization and are populated by staffs that are solving problems. To more effectively use staff time and resources, the purchase and use of an on-line knowledgebase is strongly recommended.
Cost: Minimal to Moderate
Recommendation: Many school districts fund staffing based upon a political process rather than one that is committed to a staffing formula generated by the conditions in the district. For example, a new program may generate an additional 500 computers but rarely will the new equipment generate an equivalent number of staff. Existing staff is expected to support the new equipment with existing resources. Even if the formula is less than ideal, a formula based system of staffing creates a basis and rationale for technology staffing. Considerations for the staffing formula include computer and peripheral number, buildings, network connections, number of applications supported, number of operating systems, etc. A formula driven staffing formula is highly recommended.
Cost: Moderate to High
Resources: http://techguide.merit.edu/

Professional Development

	Low Efficiency	Moderate Efficiency	Satisfactory Efficiency	High Efficiency	Impact
Comprehensive Staff Development Programs	There is no formal staff development program in place. Training is provided infrequently, and the organization depends upon individuals' own motivation to build expertise.	A staff development program is in place but is limited, voluntary, and uses a single dimension in its delivery.	***A staff development program is in place but is not comprehensive in nature in that it does not impact all staff and does not offer the depth required to change the organization.***	A comprehensive staff development program is in place that impacts ALL staff. The program is progressive in nature, and balances incentive, accountability, and diverse learning opportunities.	High
Online Training Opportunities	Online training opportunities do not exist.	Online training opportunities exist but are limited in scope and are available to a limited number of employees.	***Online training opportunities are available for staff onsite and remotely but are limited in their offerings.***	Online training opportunities are provided for staff both onsite and remotely, and represent a diversity of skill sets.	Minimal to Moderate
Just-in-time Training	No just-in-time training process or delivery system has been put into place.	Just-in-time training is used, but the process and delivery system has not been refined so it can be used realistically within the organization.	***A process and delivery for just-in-time training is in place, but has not been adopted by the organization as a mechanism for solving issues.***	A process and delivery system has been established for just-in-time training organization-wide and is used consistently.	Moderate

Expectations for All Staff	Expectations of staff are not clearly defined and are not part of the organizational culture	Expectations of staff are articulated but are limited in scope.	***Expectations of staff are articulated and are broad in scope, but have not been adopted as part of the organizational culture***.	Expectations for all staff are clearly articulated. Performance expectations are built into work functions and are part of the organizational culture.	Neutral
Troubleshooting as Part of Professional Development	***No form of troubleshooting is integrated into the professional development program***.	Troubleshooting is built into the professional development program but is limited in scope and provided inconsistently. Roles and responsibilities are not clearly defined.	Troubleshooting is built into the professional development program and is used as a major strategy for technical support. Technical versus end-user roles and responsibilities are not clearly defined.	Basic troubleshooting is built into the professional development program and is used as a first line of defense in conjunction with technical support.	Minimal to Moderate
Training for Technical Staff	Technical staff is only given training to take care of the immediate issues in the district. Advanced training is not encouraged.	***Technical staff receives consistent training around emergent issues. Advanced training is not district sponsored but is encouraged.***	Technical staff receives consistent training around emergent issues, and have limited district-sponsored opportunities for advanced training.	Technical staff receives ample training as a normal part of their employment, and includes training toward certification.	Minimal to Moderate

Domain Result Summary: According to the TSI your Professional Development (Domain 3) is considered "Moderately Efficient" requiring attention and improvement. The "Moderate Efficiency" level of development refers to a system that has some areas of excellence, but typically isolated and limited in implementation. While there is some good support in place, improvement will be required to overcome technology challenges

Recommendation: Organizations that use technology effectively can balance self-help provided by the end user with the additional technical support provided by the district. It is recommended that very basic troubleshooting skills are built into the professional development program decreasing the number of low-level technical support calls.

Cost: Minimal to Moderate

Recommendation: Organizations that have high expectations for ALL staff with systems in place to provide support will have lower support costs over the long term. While initially support costs are high bringing staff up to speed, as staff become more sophisticated those costs drop. It is recommended that clear expectations are established for all staffs including basic troubleshooting.

Cost: Neutral

Resources: http://cnets.iste.org/

Recommendation: Empowering the school employee to use technology effectively is a very effective strategy to address technical support issues. The staff member should not be expected to solve difficult technical problems. However, if simple problems can be solved or merely identified by the end-user, technical staff can concentrate on more complex tasks. It is recommended that an effective training program for ALL staff is put into place. This program should include appropriate incentives, accountability, and a diverse set of learning resources.

Cost: High

Enterprise Management

	Low Efficiency	Moderate Efficiency	Satisfactory Efficiency	High Efficiency	Impact
Trouble Ticketing System	No trouble ticketing system exists.	A simple ticketing system is in place but is not electronic and/or is simple in its implementation not allowing for universal tracking of issues and establishing trends.	***A trouble ticketing system is in place and is used extensively for responding to technical issues. Analysis of issues, response time, and possible trends is not done.***	All technical issues are recorded and delegated to appropriate resources through an electronic ticketing system. All technical issues are tracked and evaluated through this system.	Minimal to Moderate
Virus Protection	No virus software is used.	Virus software is used, but it is client-based and therefore often out of date.	Server-based virus software is used, but the parameters for its use are loosely defined and updates are not consistent.	***Server-based virus software is available, used, and automatically updated.***	Minimal to Moderate
Network Infrastructure and Bandwidth	Network access is limited and is not available in every location.	Network access is available to all locations but does not impact all computers and is limited in bandwidth.	Network access is available to all locations, but segments of the network are limited in bandwidth.	***Robust broadband network access is available to all locations allowing for unlimited network control and tool use.***	High to Significant
Desktop and Software Standardization Tools (Profiles)	No desktop standardization tools or practice are used.	Desktop standardization tools are in place but are mostly ignored once the equipment is deployed.	***Desktop standardization tools are in place, but user changes are not automatically accommodated.***	Desktop standardization tools are used to provide a common desktop for all users and access to common software. Changes to the desktop are automatically corrected.	Minimal
Network Sniffing Tools	No network sniffing tools are used.	Network sniffing tools are used for problem diagnosis only.	***Network sniffing tools are used for problem diagnosis and limited preventative maintenance.***	Network sniffing tools are used to both diagnose problems and establish performance matrices for preventative maintenance. These tools systematically monitor the network.	Minimal to Moderate
Online Knowledgebase	No online knowledgebase is present.	***An online knowledgebase is in place, but it is limited in scope and is not readily used in the organization.***	An online knowledgebase is in place and is consulted by users. It is not designed to easily expand and users do not use it as a first line of defense.	An online knowledgebase is in place and is expansive in its detail. It is used readily, and automatically grows based upon the trend data generated in other tracking systems.	Minimal to Moderate
Integrated and Systemic Electronic Communication	Electronic communication is limited and has little use for providing technical support.	Electronic communication is available to many staff but is not integrated into the daily work of employees.	***Electronic communication is available to everyone in the organization but is not readily used for technical support.***	Electronic communication is available to everyone in the organization and is integrated into daily work, so it can be used for technical support.	Minimal to Moderate
Remote Computer Management	No remote management is available	Remote management is available for servers only.	***Remote management is available for all computers but is not used extensively.***	Remote management is available for all computers and is used as a primary strategy of support.	Moderate to High
Imaging Software	Imaging systems are not used.	Imaging software is used in the most primitive sense, only providing recovery	An image is used for delivery of the machine but is not used to clone all of the software on	***Imaging software is used for delivery of new machines and as a troubleshooting***	Minimal

		services for those with the software provided by the vendor.	the machine. Imaging is used as a troubleshooting strategy.	***strategy. Software installed through the imaging process is comprehensive.***	
Metering and Application Push Technology	Metering and Push technology is not used as a support strategy.	***Metering and Push technology is used for metering but is not used for installation and updates, and its use is limited in scope.***	Metering and Push technology is used for metering and some software updates, but major software installations are handled on the individual computer.	Metering and Push technology is used for all software distribution, technical updates, and for metering of software on district computers.	Moderate
Server Farms and Centralized Services	Every site has its own server and in some cases, multiple servers. Backup and server management occurs locally.	Each site has only one server with some services (e.g., e-mail, Student information, etc.) provided centrally.	***Many servers are consolidated into a few locations and most services are provided centrally.***	All servers and services are centralized requiring minimal server management outside of one location.	Moderate to High
Application Service Providers (ASPs)	No ASP services are used.	One or two ASP services are used, but it does not impact support due to the peripheral nature of the product.	***A number of district or commercial ASP services are used but is limited to one category of software (e.g., productivity, research, libraries, content, etc.).***	A district OR commercial ASP model is used for most major software applications after a thorough cost/benefit and risk analysis.	Moderate to High
Thin-client Computing	***Thin-client computing is not used.***	Thin-client is used but is limited to a small number of users for specific applications.	Thin-client is used for most users of administrative systems and some productivity software. (Not instructional applications)	All administrative and productivity software for staff is delivered through a thin-client model. (Not instructional applications)	Moderate to High
Vendor-specific Management	Vendor tools are not installed or considered when purchasing hardware.	Vendor tools are available and have been purchased, but they are mostly unused.	Vendor tools are used in a limited way for diagnosis and prevention.	***Vendor tools are used extensively for diagnosis of issues, to streamline processes, and for preventive measures.***	Minimal
Quality Assurance (QA) and Customer Follow-up	***Surveys are done generally as part of other departmental survey work within the organization or not at all.***	Quality assurance surveys are conducted, but they are not automated and are only done annually.	Surveys are done specific to technical support; however, they are done only periodically and the data is used sporadically.	Quality assurance is measured by a random and automatic system that tracks customer satisfaction and closed tickets. Data is collected throughout the year. Questions asked are specific to technical support and the data is used to make adjustments.	Minimal
Student/Fiscal/HR/Assessment Systems	Student, Fiscal, HR and/or Assessment systems are not in place.	Student, Fiscal, HR and/or Assessment systems are partially in place, and are not reliable or intuitive.	***Student, Fiscal, HR and/or Assessment systems are in place and reliable, but do not integrate well with other systems and are not intuitive.***	Student, Fiscal, HR and/or Assessment systems are in place, reliable, intuitive, and integrate nicely with other productivity tools.	Moderate to High

Domain Result Summary: According to the TSI your Enterprise Management (Domain 4) is considered "Satisfactorily Efficient" requiring limited improvements. The "Satisfactory Efficiency" level of development refers to a system that is doing a very good job of support in many areas. Improvements in a number of areas will enhance the organizational capacity to effectively implement technology.
Recommendation: A thin-client is a computer that does not serve as a full-functioning stand alone PC. The Operating system and applications actually run on a remote server and are all centrally controlled and managed. As a result, the hardware requirements for the end-user are typically substantially less. In addition a thin-client strategy allows a small staff to ensure that users experience a consistent environment and that critical updates and software upgrades can be easily and quickly deployed. While the hardware requirements are very low for the client, they are very high for the server. Costs for hardware and software are marginally lower or neutral but support costs can be dramatically decreased. It is recommended that a thin-client computing environment should be considered for administrative applications that have little or no multi-media requirements and where end-user hardware requirements may be challenging.
Cost: Moderate to High
Resources: www.citrix.com, www.microsoft.com (Terminal Services)
Recommendation: Software distribution and metering can take place over the network with products like Microsoft's SMS and Novell's Managewise. Enormous labor savings can be gained by distributing software in this way. In addition these products allow for asset management, copyright compliance, and detection of software that may place the system at risk. It is recommended that Metering and Application Push technology is utilized for software distribution and management.

Cost: Moderate
Recommendation: A technology support team should be concerned about the quality of service they are providing their end-users. Good quality assurance tracks downtime, quality of service, and responds to customer feedback. The most effective quality assurance is conducted randomly throughout the year and drives changes in support strategies. It is highly recommended that the district put into place a quality assurance and customer feedback system.
Cost: Minimal
Recommendation: A large percentage of technical issues that arise are often simple in nature. In most cases, with the right information and a culture that promotes minimal troubleshooting, users can help themselves for many technical problems. An easy to use and searchable knowledgebase is critical to empower users to solve the simple problems themselves. The more effective knowledgebase implementations are those that grow with the organization and are populated by staff that are solving problems. To more effectively use staff time and resources, the purchase and use of an online knowledgebase is strongly recommended.
Cost: Minimal to Moderate
Recommendation: Server management can be time-consuming, complex, and resource intensive. Whenever possible, consolidation of server resources to minimize management is a great advantage. This reduces labor required for backup, redundant systems, and unnecessary overhead. To create server farms a robust network must be in place. It is strongly recommended that when appropriate network infrastructure is in place, centralization of servers is implemented.
Cost: Moderate to High

NOTE:
Is there is an area from the TSI rubric for which you were particularly interested in obtaining recommendations but does not appear on your results above? Because you've obtained a profile of your district or school you are eligible to view all possible recommendations.

Appendix G: References and Resources

References Cited

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Sandholtz, J.H., Ringstaff, C., Dwyer, D.C. (1997.) *Teaching with Technology: Creating Student-Centered Classrooms*. New York: Teachers College Press.

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Resources

The following organizations provided information and technical assistance:

California Instructional Technology Clearinghouse
http://clearinghouse.k12.ca.us

International Society for Technology in Education (ISTE)
http://www.iste.org/

ISTE National Educational Technology Standards
http://cnets.iste.org/

ISTE Technology Support Index (TSI)
http://tsi.iste.org/

Northwest Americans with Disabilities Act & Information Technology Center
Nathan White, Accessible IT Coordinator
http://www.nwada.org/

Northwest Regional Educational Laboratory
http://nwrel.org/

Oregon Department of Education
http://www.ode.state.or.us/

Oregon Technology Access Program
Gayl Bowser, Coordinator
http://www.otap-oregon.org/

Partnership for 21st Century Skills
http://www.21stcenturyskills.org/

Representatives from the following school districts provided advice and resources:

Bellingham School District
http://www.bham.wednet.edu/

Boston Public Schools
http://boston.k12.ma.us/

Kent School District
http://www.kent.k12.wa.us/webnav/

Lake Washington School District
http://www.lkwash.wednet.edu/

Los Angeles Unified School District
http://notebook.lausd.net/portal/page?_pageid=33,47493&_dad=ptl&_schema=PTL_EP

San Antonio Independent School District
http://www.saisd.net/

South Kitsap School District
http://www.skitsap.wednet.edu/

Glossary of Terms

Cat 5, 6: A wiring standard used within buildings.

Certificates of Initial Mastery (CIM) and Advanced Mastery (CAM): Part of the Oregon standards; the CIM is awarded to performance standards on state tests and classroom work samples in English/language arts, mathematics, and science; and the CAM is the award earned by students who have demonstrated rigorous application of knowledge and skills in preparation for their post-high school goals.

Dashboard: A type of interactive interface that organizes and presents information in a way that is easy to read and can be customized in multiple ways for users.

Data Center: Secure, physical location in PPS Information Technology where the majority of network equipment is housed.

Data Warehouse: A database that allows access through a server to information stored in different locations, on various computers, in varying formats. By making information more integrated, accessible, and current, data warehouses support knowledge management and data-driven decision making within a large organization such as a public school district.

EBSCOhost: An online periodical repository used for information search and retrieval.

EDirectory: Novel-based user authentication protocol and structure.

English Language Proficiency Assessment (ELPA): Part of the Oregon Department of Education (ODE) requirements for Limited English Proficient (LEP) students.

End user: The person or persons who will be using a particular technology and for whom it is designed.

Education Plan and Profile (EPP): Part of ODE requirements for students. Beginning in seventh grade, students establish personalized education, career, and life goals which are reviewed at least annually with adult guidance; the profile documents the student's progress toward achieving the goals outlined in the plan.

eSIS: The electronic student information system being implemented in PPS, produced by Administrative Assistants Limited company.

Gap analysis: A formal study of what an organization is currently doing and where it wants to go in the future. In information technology, gap analysis is a tool to help guide the transition from an existing to an improved system and/or service model. By identifying the gaps between desired outcomes and current functions, this assessment tool can provide information on needed costs, time, staffing, and other resources.

Intranet and Extranet: A private *network* inside a company or organization that uses the same kinds of software that you would find on the public *Internet*, but that is only for internal use. An Extranet is an intranet that is accessible to computers that are not part of an organization's own private *network*, but that is not accessible to the general public, for example to allow vendors and business partners to access a company web site.

IRNE/INET: Telecommunications network designed to carry all voice, video, and data communications.

Knowledge management: Emerging field describing how organizations can develop, share, and act on qualitative and quantitative data more effectively and efficiently.

Local Area Network (LAN): A group of computers and associated devices that share a common communications line or wireless link and typically share the resources of a single processor or server within a small geographic area. Usually refers to the wiring and network equipment (routers, switches, hubs, and servers) on a single campus.

Lightweight Directory Access Protocol (LDAP): A standards-based set of protocols for accessing information in a directory structure.

Listserv: An email program that allows multiple computer users to connect to a single system, creating an online discussion.

Megabits per second (Mb/s or Mbps): A measure of network speed. Mega means million.

OS X: The newest operating system from Apple Computers. This operating system is significantly different than all previous versions of the Apple OS because it is built on the Unix operating system.

Proficiency-based Admissions Standards System (PASS): Part of Oregon University System (OUS) requirements for acceptance into the state's seven public colleges/universities. PASS is designed to create a seamless K-16 system by aligning with Oregon's K-12 academic content standards and benchmarks (CIM/CAM).

Private Branch Exchange (PBX): A telephone network used in large organizations.

Technology Enhanced Student Achievement (TESA): ODE-sponsored initiative that provides districts with web-based access to the Oregon Statewide Assessment Tests.

Wide Area Network (WAN): The portion of a computer network that connects several local area networks (LANs) together. The components of this network are often leased from another provider such as the local telephone, cable or utility company.

Appendix H:

Portland Public Schools
Technology Plan Budget for 2006-2011

E-Rate Eligible Products and Services

Telecommunications Services

Service or Function	Quantity and/or Equivalent Capacity, 2006-07	Pre-discount Cost (est.)				
		2006-07	2007-08	2008-09	2009-10	2010-11
Local and long distance telephone service, including Centrex, DID, custom calling features, directory assistance	1,216 lines/extensions	282,264	262,114	241,964	221,814	201,664
High-capacity trunk circuits for voice	1.5 mbps, 16 circuits	120,062	142,292	164,522	186,752	208,982
Additional POTS lines (emergency/alarm)	539 lines/extensions	148,946	133,614	126,474	123,618	123,618
Long distance telephone service	1,216 lines/extensions	12,039	12,000	11,950	11,900	11,850
High speed access lines (WAN circuits)	100 mbps, 90 buildings	685,957	679,321	646,141	632,869	632,869
High speed access lines (WAN circuits)	1.5 mbps, 11 buildings	24,372	24,400	24,400	24,400	24,400
High speed WAN connection circuits	Up to 150 mbps, 3 circuits	68,555	68,600	68,600	68,600	68,600
High speed WAN connection circuits	500 - 622 mbps, 2 circuits	60,171	53,492	53,492	53,492	53,492
High speed WAN connection circuits	Up to 100 mbps, 2 circuits	16,668	14,372	14,372	14,372	14,372
Cellular telephone service	276 existing or new users	194,261	200,261	206,261	212,261	218,261
Paging service	381 existing or new users	14,017	14,000	13,925	13,850	13,775

Internet Access

Service or Function	Quantity and/or Equivalent Capacity, 2006-07	Pre-discount Cost (est.)				
		2006-07	2007-08	2008-09	2009-10	2010-11
Dedicated Internet access service *	30 mbps	28,612	38,149	42,918	47,686	47,686
* Provisioned during 2006-07 through consortium headed by Clackamas ESD.						

Internal Connections / Basic Maintenance

Service or Function	Quantity and/or Equivalent Capacity, 2006-07	Pre-discount Cost (est.)				
		2006-07	2007-08	2008-09	2009-10	2010-11
Upgraded/replacement LAN equipment (servers and software)	none	-	-	-	150,000	150,000
LAN cable and/or wireless systems	none	-	-	-	150,000	150,000
LAN maintenance	none	-	34,800	35,600	36,400	37,200
Telephone system maintenance	none	-	158,000	158,000	158,000	158,000

Total Pre-discount Cost (est.)	1,655,924	1,835,415	1,808,619	2,106,015	2,114,770
Average Discount Rate (est.)	63%	63%	63%	63%	63%
Total Post-discount Cost (est.)	612,692	679,104	669,189	779,225	782,465

Ineligible Technology Support Resources

Service or Function	Quantity and/or Equivalent Capacity, 2006-07	Budgeted Cost (est.)				
		2006-07	2007-08	2008-09	2009-10	2010-11
Hardware (computers and other equip.)	3,000 computers, 20 servers	2,493,050	2,497,203	2,501,563	2,506,141	2,510,948
Software	various	835,744	873,031	912,183	953,292	996,456
Professional development	various	519,075	403,942	403,942	403,942	403,942
Maintenance (equipment) **	various	4,913	5,159	5,417	5,687	5,972
Maintenance (equipment)	various	114,414	120,135	126,141	132,449	139,071
Upgraded/replacement LAN equipment (servers and software) **	none	-	-	50,000	100,000	100,000
LAN cable and/or wireless systems **	various	21,000	31,000	76,000	111,000	101,000
LAN maintenance **	90 buildings	85,000	52,200	53,400	54,600	55,800
LAN maintenance	90 buildings	390,785	410,325	430,841	452,383	475,002
Telephone system maintenance **	90 buildings	264,000	106,000	106,000	106,000	106,000
Telephone system maintenance	90 buildings	58,735	55,798	53,008	50,357	47,840
Other	various	5,842,671	6,226,471	6,504,559	7,034,019	7,380,868
** Item is eligible for E-rate, but is not expected to be funded by E-rate.						

Total Support Cost (est.)	10,629,387	10,781,262	11,223,053	11,909,870	12,322,899

Total E-rate & Support Cost (est.)	11,242,079	11,460,366	11,892,242	12,689,095	13,105,363

Revenue Streams Identified to Support Technology Plan

Revenue Source	Budgeted Revenue (est.)				
	2006-07	2007-08	2008-09	2009-10	2010-11
General Fund budgeted to Information Technology Department	9,563,852	9,898,587	10,245,037	10,603,614	10,974,740
General Fund budgeted to Publication Technology Department	187,646	194,214	201,011	208,046	215,328
General Fund facilities capital funding	20,000	30,000	25,000	10,000	-
General Fund / grants budgeted to client schools/departments	1,355,448	1,337,565	1,321,193	1,367,435	1,415,295
Enhancing Education through Technology grant (EETT)	115,133	-	-	-	-
Capital bond issue, voter approved	-	-	100,000	500,000	500,000

Total Tech Plan Revenue (est.)	11,242,079	11,460,366	11,892,242	12,689,095	13,105,363

Portland Public Schools
Office of Information Technology
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