Library Media and Technology Plan 2011

Approved by the Board of Education:
June 3, 2008
EXECUTIVE SUMMARY

Oconomowoc's Library Media and Technology (LMT) Plan supports the District's strategic direction through a unified program of information and technology services. LMT resources are used to ensure robust learning opportunities and to support students’ acquisition of knowledge and skills needed for employability and lifelong learning. The LMT plan reflects the planning framework recommended by the Wisconsin Department of Public Instruction.

Relevant Research and Best Practices

Library media and information technologies possess much potential to improve teaching and learning. According to a recent meta-analysis (Waxman, Connell, & Gray, 2002), use of instructional technology was associated with positive student outcomes. Similarly, instructionally-based library media programs managed by certified full-time staff had a large learning impact for Wisconsin students (Smith, 2006).

However, most school systems trail the information technology curve, especially regarding how students perceive and use technology (Gewertz, 2007). Young children spend more time using screen media than playing outdoors or reading and teenagers spend as much time using digital media, often simultaneously, as they do watching TV (Oblinger & Oblinger, 2006).

School systems must develop and maintain robust infrastructures (WANs, LANs, SANs, etc.) to support growing use of 21st Century tools, Web 2.0 tools, personal computers, and high-tech classrooms. Sustained and focused professional development is also key to unlocking the potential of education technology. Model training programs, digital age standards for students and educators, and governmental funding for library and information technology initiatives are among solutions designed to overcome these barriers.

Oconomowoc Area School District: Here we grow!

The Oconomowoc Area School District (OASD) is located 30 miles west of Milwaukee, Wisconsin and consists of five elementary schools, one middle school, and one high school. Voters approved a $49.6 million dollar bond referendum in November 2006. Two new intermediate schools, a new performing arts center and gymnasium addition at Oconomowoc High School were included in the referendum.

The District serves more than 4,600 students from three counties: Waukesha, Jefferson, and Dodge. Student enrollment has increased by 6.9% over the past three years. Approximately 51% of the students are male, 9% are economically disadvantaged, and 14% of students are eligible for special education services. Minorities comprise 5% of the student population.
Oconomowoc Community
With a population of about 28,000, Oconomowoc and its surrounding area have a variety of light industry as well as numerous family farms. The economic base is growing with the development of an industrial park built on the outskirts of Oconomowoc. In addition, many area residents, preferring the peaceful Lake Country Area, commute to surrounding cities and to Milwaukee to work while enjoying the advantages of living and raising their children in Oconomowoc and its surrounding countryside. The area offers its residents a variety of leisure activities, several historic sites, and a quaint downtown in the City of Oconomowoc. In addition to convenient shopping, residents enjoy the surrounding lakes for swimming, boating, and fishing in the summer and skating, ice fishing, and snowmobiling in the winter. The city also boasts a newly constructed YMCA at the Pabst Farms Development.

Oconomowoc’s strategic location provides ready access to large markets, all forms of transportation, and a favorable tax climate. Oconomowoc boasts three business parks – two at capacity and one close to total occupancy. The new Pabst Farms development, located adjacent to I-94 and STH 67, is under construction and will provide an additional 300 acres for manufacturing/business purposes, and 120 acres for retail/office development.

The LMT Planning Process
The Oconomowoc Area School District followed DPI’s Components of Comprehensive Information ‘Library Media and Technology Plan (2003) for plan development. District staff members participated via pre-planning activities, data collection, data analysis, and plan writing and review. Teachers, students, and parents also provided input via traditional and online surveys.

Previous LMT Plan
The OASD made significant progress toward previously stated information and technology goals. Some examples include

- Developed a standards-based Student Competency Worksheet to maintain relevant and engaging technology instruction within a K-12 scope.
- Increased virtual learning opportunities for students and staff
- Implemented secure remote access to network resources for students and staff
- Implemented a centralized Library management system
- Increased computer inventory
- Reduced computer replacement cycle
- Introduced wireless and handheld computing technologies

Oconomowoc Web Links
www.oasd.k12.wi.us
http://www.oconomowocusa.com
http://www.oconomowoc.org/
o Improved integration of management and student information systems

o Invested in a Storage Area Network or SAN

o Moved student databases to a secure off-site host.

o Upgraded The District Tech Center to improve operational effectiveness due to network growth (VoIP phone system, Terminal Server for remote access, District library system, digital video camera system at OHS, etc.)

o Added a full-time computer/network technician to improve user support

Work will continue on partially achieved goals while also investigating, testing, and implementing robust information technologies for student achievement, employability, and lifelong learning. Meaningfully integrated instructional practices with an emphasis on engaged learning will guide our educational technology organization and delivery of instruction. Professional development and staff practices will reflect technology literacy goals in an increasingly digital age.

Current Opportunities and Challenges
A growing student population and new school facilities present several opportunities and challenges for the Oconomowoc Area School District. District leaders incorporated state-of-the-art infrastructure (including school-wide wireless access) and classroom technology into the intermediate school designs that can serve as a standard for other Oconomowoc schools. For example, each intermediate classroom will contain a ceiling-mounted projector, projector screen, DVD/TV-Tuner combo player, wireless PA system, high-speed Internet, phone, and a multimedia computer station. The intermediate school libraries will include a high-tech teaching and learning area including computers, smartboards, and projectors.

Current Challenges
Several challenges face the school district. These challenges include

o Meeting the learning needs of tech-savvy students in the 21st Century;

o Providing 24/7 access to 21st Century information and computing technologies;

o Helping educators use 21st Century information and computing technologies; and

o Building, maintaining, supporting, and financing a 21st Century IT network.
Library Media and Technology Plan

2011

Oconomowoc’s 2011 LMT goals reflect relevant research, an assessment of current plan status, and identification of emerging needs and opportunities. Corresponding action plans will help actualize each goal. The costs of executing the plan are significant. Most revenue support will come from local tax dollars. State and federal grants will also provide assistance. The LMT will be monitored and adjusted each year.

Goal Summary

Goal #1. Library Media and Technology (LMT) resources will be used to raise student achievement

Objective 1.1: Student learning opportunities will be consistently infused with relevant, engaging, and research-based instructional and information technologies.

Objective 1.2: Consistent technology opportunities for students will be offered at each grade level.

Objective 1.3: Staff and students will collaborate to share ideas, information and content.

Objective 1.4: Sustained teacher training / professional development opportunities will focus on integration of instructional and information technology into complex student practices.

Goal #2. LMT resources will be used to manage district and school resources

Objective 2.1: Access to instructional and information technologies, especially within the classroom, will be improved for all students and staff.

Objective 2.2: The District's Wide and Local Area Networks will support the addition of two new schools, expanded use of Web 2.0 tools, 21st century learning tools, information systems, and communication systems.

Objective 2.3: There will be adequate organizational structures, organizational processes, and staffing levels to support addition of two new schools, expanded use of Web 2.0 tools, 21st century learning tools, information systems, and communication systems.
Goal #3. LMT resources will be used to build relationships with stakeholders

**Objective 3.1:** The District will invest in online learning systems and partner with local groups to strengthen literacy and communication.

**Objective 3.2:** The District will partner with local colleges to offer post-secondary technology education and/or training to community members and district employees in district computer labs.

**Objective 3.3:** The District will continue to encourage stakeholder awareness, interest and understanding of emerging technologies via Board of Education meeting broadcasts and school site 'open house' formats showcasing integrated technology and curriculum activities/projects.
Disseminating the Plan

The LMT plan will be communicated by a variety of means (print, verbal, electronic). Information will be posted to Oconomowoc’s website. Periodic press releases will expand community awareness of how the District invests resources in support of community expectations and needs.

Monitoring, Evaluation, and Plan Revision

The LMT plan will be monitored and revised annually. Progress reports will be presented to the Superintendent and other school leaders. The District’s Annual Report and School report Cards (made available to all community members) will also reflect elements of the LMT plan. The Research, Technology, and Assessment Department will oversee the monitoring and evaluation process. Key stakeholding groups will be identified and involved in data collection and interpretation, plan revision, and reporting.

Acknowledgements

The Oconomowoc Area School District would like to acknowledge the efforts and support of all stakeholders who participated in the planning process. You are much appreciated! Thank you for helping us build Quality Schools for a Growing Future.

For More Information

Documents referenced in the plan are available via the District’s Administrative Offices (262-560-2118).
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I. INTRODUCTION

Oconomowoc’s Library Media and Technology (LMT) Plan 2011 supports the District’s strategic direction through a unified program of information and technology services. LMT resources are used to ensure in-depth learning opportunities and to support students’ acquisition of knowledge and skills needed for employability and lifelong learning. The LMT plan reflects the planning framework recommended by the Wisconsin Department of Public Instruction.

A summary of relevant research and Oconomowoc’s LMT vision and mission statements is presented in Section I of this document. Section II establishes the local context and details the planning process. Section III recaps the previous LMT plan. Section IV presents the 2011 LMT Plan goals and objectives. The remaining sections articulate plan dissemination, monitoring and evaluation processes, and references. Related information is attached to this document.

Relevant Research and Best Practices

Educational technology is defined as the application of knowledge, tools, and skills to solve practical problems and extend human capabilities (Wisconsin Department of Public Instruction, 2003). Technology is broader than computers: it includes voice, video, and data and encompasses portable electronic tools, computers, distance learning systems, presentation systems, video production tools, communications systems, and information retrieval systems. Technology has the potential to make information more accessible, and to facilitate data analysis and knowledge construction. Technology trends are summarized in the next section.

Information and Technology Trends

Top uses of technology within schools include Internet connectivity and data management while popular “growth technologies” include laptops and wireless networks (Bichelmeyer & Molenda, 2006). Access to computer and Internet resources is no longer a significant issue for schools. About 95 percent of Oconomowoc students have home access to a computer with Internet connectivity (Oconomowoc Parent Survey, 2007). The national student-to-computer ratio has decreased to 3.8 and nearly all schools have high-speed Internet access permitting regular use of digital media (Technology Counts 2007). About one-half of U.S. schools incorporate video streaming in classroom activities.

The iGeneration

Most school systems trail the information technology curve, especially regarding how students perceive and use technology (Gewertz, 2007). Young children spend more time using screen media than playing outdoors or reading and teenagers spend as much time using digital media, often simultaneously, as they do watching TV (Oblinger & Oblinger, 2006).

Social media also appeals to this “connected” group. The aforementioned authors report that 70 percent of teenagers Instant Message to keep in touch with family and friends. Handheld computers, tablet PCs, smart phones and Web 2.0 tools
Emerging Technologies

Time to Adoption (< 1 yr)
1. Social Computing
2. Social Networking
3. Personal Broadcasting
4. User-Created Content

Time to Adoption (2 to 3 yrs)
5. mLearning: The Phones in Their Pockets
6. Virtual Worlds
7. Educational Gaming

Time to Adoption (4 to 5 yrs)
8. Augmented Reality & Enhanced Visualization
9. Context-Aware Environments & Devices
10. The New Scholarship & Emerging Forms of Publication
11. Massively Multiplayer Educational Gaming


Challenges
School officials face several challenges in efforts to effectively implement and use information technology. First, educators must understand students’ out-of-school perceptions and uses of technology. These “digital natives” often have access to technologies that are not widely available in school settings. Adequate funding for a robust LMT program is a problem given limited resources (Bichelmeyer & Molenda, 2006). Similarly, maintaining sufficient tech support levels is a persistent challenge (Stansbury, 2008). Quality professional development opportunities, especially related to classroom tech integration related to digital tools, are essential.

Like Podcasts, Web logs, Wikis, photo-sharing, and moviemaking are favorites among this group. Here are some other key stats (Pew/Internet and American Life Project, 2007)

- 39% of teens share online creations;
- 33% work on web pages or blogs for others;
- 28% have created a journal or blog;
- 27% maintain a personal webpage;
- 26% remix content;
- 55% create profiles on a social networking site;
- Girls lead the charge in social networking and blog sites;
- Boys upload more video (YouTube);
- Multi-channel teens layer each communication; and
- e-mail is losing its luster among teens.
The Impact of Information Technology on Student Achievement

The impact of school libraries on student achievement has received renewed attention in recent years. A number of studies offer evidence of a positive relationship between robust library/media programs and higher student achievement. However, a consistent and significant “tech effect” has yet to be established.

Library Studies

The Wisconsin Department of Public Instruction commissioned a study of its school library media programs in 2006. One objective was to examine the impact of robust library services on student learning. The researcher surveyed Wisconsin’s library media specialists and correlated responses with student performance on statewide achievement tests. On average, school and student demographic variables explained most variation in test scores. However, the variables representing a school’s library media program also explained a small yet, statistically significant portion of the variance in reading and language arts test scores (Smith, 2006). According to the author, instructionally-based library media programs staffed by certified full-time staff had the largest impact on student learning.

In another study, a statewide survey showed that Massachusetts’s schools with library programs received higher standardized test scores than non-program schools (Baughman, 2000) and researchers of Oregon schools found that reading test scores rose as school library programs were enhanced (Lance, Rodney, & Hamilton-Pennell, 2001). The authors also noted that test score increases were not explained by other variables included in their statistical model. In addition, Smith (2001) found that Texas schools with a full-time librarian showed a greater percentage of students meeting statewide test standards compared to non-librarian schools. Other studies are available at http://www.lrs.org/impact.php.

Limitations

While some studies link information and educational technology programs to improved student achievement, there is little consensus on the issue (Molenda & Sullivan, 2003). Trotter (2007) points to a limited and unfocused research agenda regarding the educational benefits of technology. In addition, much of existing research base consists of anecdotal, descriptive, and correlational studies that, by design, limit causal claims. Experimental research is needed to establish the causal link between information technologies and improved student achievement.

Quality Library Programs...

- Promote quality learning opportunities
- Provide student-centered information & reading resources
- Support student achievement via policies & procedures

WI Department of Public Instruction
Sustained Systematic Professional Development

Sustained teacher training and support is key to maximizing the impact of information technology on student achievement (Dickard, 2003; Fouts, 2000; Sivin-Kachala & Bialo, 2000). Unfortunately, current educational practice suggests that such opportunities are lacking. For example, although most states have created technology standards for teachers, less than half require tech courses or demonstration of tech competence for initial teacher licensure. Only nine states require tech competence for recertification purposes (Ed Week, 2007).


- familiarization with the operation of equipment and software;
- development of tech tool proficiency to carry out school tasks;
- application of school management software; and
- integration of technology into teaching and administrative processes.

Brown and Fouts (2003) offer additional advice

- training must emphasize collaboration, teaming, and sharing to advance IT planning and implementation;
- in-depth and ongoing training must be built into Library Media and Technology Plans;
- follow-up training and support must be offered; and
- teacher training must relate the development of technical skills and sound pedagogy to enrich the work of teachers and students.

Quality Professional Development

- ... is an ongoing process and conducted in a long-term, sustained manner
- ... is job-embedded and inquiry-based
- ... supports systemic change

http://www.ncrel.org/sdrs/areas/issues/educators/profdev/ed200.htm
Educational Technology to Improve Higher Order Thinking and Student Achievement

There has been much interest in the relationship between technology and student achievement since the mass introduction of school computers. Waxman, Connell, and Gray (2002) conducted a meta-analysis of recent quantitative studies examining this relationship. The authors found that teaching and learning with technology had a modest positive effect (ES=+0.30) averaged across student outcomes when compared to traditional instructional methods. Technology use exerted a slightly larger effect on cognitive outcomes (ES=+0.39) than affective outcomes (ES=+0.28). Surprisingly, technology had a small negative effect (ES=-0.15) on students' behavioral outcomes.

Computer-Based Instruction is a fairly effective means of teaching students basic facts and skill sets (Ringstaff & Kelley, 2002). However, a growing portion of teaching and learning is constructivist and educators face several implementation obstacles in this environment. Becker (2000) identified several impediments via analysis of a national teacher survey. “Learning with computers” was impeded by

- class time constraints (i.e., <1 hour);
- pressure to cover much curriculum;
- inconvenient access to computers (i.e., <5 per classroom);
- incompatible educational philosophy (traditional vs. constructivist); and
- underdeveloped computer skills of the classroom teacher.

Becker's research also isolated the practices of constructivist teachers and examined their students' outcomes. He found that educators who overcame the obstacles were better positioned to accomplish the goals of most current instructional reform efforts, to engage in "authentic" teaching and learning activities, and to deepen understanding of a content area.

Standards for Students

Effective use of educational technology is addressed via standards. Wisconsin constructed the following standards for its students (Wisconsin Department of Public Instruction, 1998):

- **Media and Technology**—Students will select and use media and technology to access, organize, create, and communicate information for solving problems and constructing new knowledge, products, and systems.

- **Information and Inquiry**—Students will access, evaluate, and apply information efficiently and effectively from a variety of sources in print, nonprint, and electronic formats to meet personal and academic needs.

- **Independent Learning**—Students will apply technological and information skills to issues of personal and academic interest by actively and independently seeking information; demonstrating critical and discriminating reading, listening, and viewing habits; and, striving for personal excellence in learning and career pursuits.
The Learning Community—Students will demonstrate the ability to work collaboratively in teams or groups, use information and technology in a responsible manner, respect intellectual property rights, and recognize the importance of intellectual freedom and access to information in a democratic society.

The International Society for Technology in Education (ISTE) also issued standards outlining what students should learn to live productively in an increasingly digital world. The National Educational Technology Standards for Students (2007) include:

1. Creativity and Innovation
   Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

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

3. Research and Information Fluency
   Students apply digital tools to gather, evaluate, and use information.

4. Critical Thinking, Problem-Solving & Decision-Making
   Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources.

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

6. Technology Operations and Concepts
   Students demonstrate a sound understanding of technology concepts, systems and operations.

21st Century Tools

Oconomowoc students use handheld technology in learning activities.
Authentic Inquiry/Problem-based Learning Units

Some research suggests that teachers employing Problem-Based Learning (PBL) techniques are more likely to use technology as a student-centered tool for learning (Park & Ertmer, 2007). PBL is an instructional method that challenges students to "learn to learn" by working cooperatively to solve real world problems. Solutions to PBL activities require each group to hypothesize, collect, analyze, integrate, synthesize, summarize, and explain answers (Torp & Sage, 2002). Some examples of PBL units include research projects, science experiments, and engineering design projects.

Information and technology resources can assist teachers and students in their pursuit of PBL. Potential tools include the Internet, online communication, computer simulation, distance learning opportunities, and online course programs. Spreadsheets and database applications also facilitate PBL.

21st Century Tools

Oconomowoc students use technology to produce and broadcast multi-media presentations
Staff Adoption and Effective Use of Technology During Teaching Practices

Staff adoption and effective use of technology during teaching practices depends upon several factors. Teachers must have time to integrate technology into learning units, they must have sufficient access to information and computer resources, they must “lean” toward constructivism, they must understand that technology can facilitate teaching and learning, and they must have sufficient information and computer skills to facilitate learning.

School leaders may aid adoption and use by inspiring a shared vision for educational technology, removing contextual barriers, providing sustained and systematic professional development opportunities, and providing adequate, on-site technical support (Ringstaff & Kelley, 2002). In addition, implementation of technology that is user-friendly, engaging, need-based, and flexible is more likely to be adopted and used by the average classroom teacher (Baule, 2007).

Standards for Teachers

Adherence to ISTE standards for teachers may facilitate the adoption and use of education technology. Schools should help educators become proficient in the following areas (Ringstaff & Kelley, 2002)

- Tech operations and concepts;
- Planning and designing learning environments and experiments;
- Teaching, learning, and curriculum;
- Assessment and evaluation;
- Productivity and professional practice; and
- Social, ethical, legal, human issues.

Oconomowoc teachers learn how to use mobile laptop carts.
Summary of Relevant Research and Best Practices

Effective use of educational technology has the potential to improve teaching and learning. Computer resources and Internet access is nearly universal in U.S. schools and households enabling “anytime/ anywhere” learning opportunities for students and adults. Mobile technologies like wireless notebook computers/carts and personal digital assistants are providing school leaders flexible and cost-effective means to extend technology into classrooms. Web 2.0 and 21st century tools such as Podcasts, wikis, blogs, digital libraries, database and spreadsheet software, virtual collaboration, and presentation devices are helping educators advance higher-order teaching and learning.

Several factors have been identified as “tech effect” inhibitors including inadequate professional development for teachers and significant hardware and software costs. Model training programs, digital age standards for students and educators, and governmental funding for library and information technology initiatives are among solutions designed to overcome these barriers.

LMT Vision and Mission Statements

Oconomowoc’s Library Media and Technology Plan (LMT) supports the District’s strategic direction through a unified program of information and technology services. LMT resources will be used to ensure robust learning opportunities for students and to support acquisition of knowledge and skills needed for employability and lifelong learning.

Oconomowoc’s Library Media Program

Our mission is to foster a learning community of efficient users and discriminating consumers of ideas and information through access to a diverse range of print and non-print media and technology.
II. BACKGROUND

Oconomowoc Demographics

The Oconomowoc Area School District is located 30 miles west of Milwaukee, Wisconsin and consists of five elementary schools, one middle school, and one high school. The school District encompasses approximately 120 square miles surrounding the city of Oconomowoc and draws its students from three counties: Waukesha, Jefferson, and Dodge.

Oconomowoc Area School District: Quality Schools for a Growing Future

The Oconomowoc Area School District (OASD) is located 30 miles west of Milwaukee, Wisconsin and consists of five elementary schools, one middle school, and one high school. Voters approved a $49.6 million dollar bond referendum in November 2006. Two intermediate schools, a new performing arts center and gymnasium addition at Oconomowoc High School, and refunding of $2.1 million dollars of outstanding debt were included in the referendum.

The District serves more than 4,600 students from three counties: Waukesha, Jefferson, and Dodge. Approximately 51% of the students are male, 9% are economically disadvantaged, and 14% of students are eligible for special education services. Minorities comprise 5% of the student population. Enrollment has increased by 6.9% in the last three years. Modest enrollment growth may continue for several years.

Community

The area offers its residents a variety of leisure activities as well as historic sites and a quaint downtown in the City of Oconomowoc. In addition to convenient shopping, residents enjoy the surrounding lakes for swimming, boating, and fishing in the summer and skating, ice fishing, and snowmobiling in the winter. The city has several historic buildings in its downtown area and boasts a newly constructed YMCA at the Pabst Farms Development.

With a population of about 28,000, Oconomowoc and its surrounding area have a variety of light industry as well as numerous family farms. The economic base is continually growing as new businesses and residents move into the area. In the last few years, this growth increased with the development of an industrial park.
built on the outskirts of Oconomowoc. In addition, many area residents, preferring the peaceful Lake Country Area, commute to surrounding cities and to Milwaukee to work while enjoying the advantages of living and raising their children in Oconomowoc and its surrounding countryside.

Clearly, the Oconomowoc Area School District is continually developing to meet the needs of the community and its students. It embraces the challenges of the future and continues to work at improving the quality of education for its residents.

Technology and Instructional Teams

The District uses a combination of two teams (Tech Cabinet) to guide library media and technology initiatives. Tech Cabinet meets on a monthly basis during the school year. The District’s Instructional Services team comprises staff charged with technology integration and library media services. This team addresses such issues as instructional software, information literacy and professional development and meets on a regular basis to coordinate work.

The Technical Services team manages network/computer resources, information systems, phone systems, and the OASD website. The team meets weekly to review, plan, prioritize, and coordinate work.
LMT Planning Process

The Oconomowoc Area School District followed DPI's *Components of Comprehensive Information Library Media and Technology Plan* (2003) for plan development. District staff members participated via pre-planning activities, data collection, data analysis, and plan writing and review. Teachers, students, and parents also provided input via traditional and online surveys.

Community & Adult Literacy Resources

There are stakeholders and community resources available as we continue our Library Media and Technology Planning efforts. The Instructional Technology Services group from CESA #1 provides information, planning, and support for regional technology initiatives and grant consortia opportunities. Other member groups from CESA #1 also provide expertise, such as the Staff Development, Assessment, and Assistive Technology centers.

The Oconomowoc Public Library ([http://www.wcfs.lib.wi.us/opl/](http://www.wcfs.lib.wi.us/opl/)) is a key provider of adult literacy resources and opportunities. Waukesha County Technical College ([http://www.wctc.edu/](http://www.wctc.edu/)) also offers many learning opportunities for adult learners. Support and development of Critical life skills like writing and grammar is integrated into student services.

OPL provides adult literacy resources
Goal Status

This section provides an assessment of progress toward the District's previous Library Media and Technology Plan. In particular, this section identifies goal achievement and strategy implementation. Evidence was collected from many sources including school databases, inventories, reports, and documents. Perceptual data were collected from students, parents, and staff via surveys.

Use of existing data is recommended because collection is usually cost-effective, existing data are not biased by the collection or analysis process, and abundances of "rich" data are usually collected but not sufficiently used (Worthen, Sanders, & Fitzpatrick, 1997). Records are also valuable because they represent stable data, describe critical events, identify implementation problems and allow study of contextualized trends and sequences (Rossi, Freeman, & Lipsey, 1999).

Oconomowoc Students solve problems with handheld technology.

Augmented reality games are PDA-based simulations that use GPS-based technologies to create a virtual world layered on top of a real-world context.
Goal #1.
Library Media and Technology (LMT) Resources will be used to raise student achievement.

Objective 1.1
All students will use information literacy and instructional technology to construct new knowledge, solve problems effectively, make informed decisions, and communicate effectively. Information literacy and technology skills will be integrated into content area curricula.

The use of technology in the Oconomowoc Area School District is woven throughout the curriculum to enhance what students are learning. Because technology is dependent on the content being taught, the way it is used varies among classes and sometimes among students. Students are introduced to the majority of common software applications (e.g., word processing, spreadsheet, graphing, presentation, concept mapping, organization, etc.) before high school. Computer Labs are used for research, creating presentations of research, online assessments, typing tasks, career planning, yearbook, school newspaper, concept mapping for papers and presentations, 3D architectural drawing, communication between students and staff, and online demonstrations.

OASD integrates information media, instructional technology curricula, and 21st century skills by

- reviewing information literacy/instructional technology curriculum standards;
- integrating 21st century skills into information literacy/instructional technology curriculum;
- evaluating status of current information literacy assessments and revise as needed; and
- identifying scope and sequence for instruction of information literacy and instructional technology curriculum.

Because of this work, a Student Competency Worksheet was developed in an effort to maintain relevant and engaging technology instruction within a K-12 scope. These competencies align with 21st Century Skills and Wisconsin’s Model for Academic Standards for Information and Technology Literacy.

Student LMT Competencies align appropriate practices and instructional resources to skill introduction, development, and mastery levels.
## Student Competencies Worksheet

<table>
<thead>
<tr>
<th>Content/Standard</th>
<th>Software/Skill</th>
<th>Grade Level Expectation</th>
<th>K-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7-8</th>
<th>9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organize/ Create Information</strong></td>
<td>Kidspiration</td>
<td>I/D</td>
<td>M</td>
<td>--</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inspiration</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>M</td>
<td>--</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MS Publisher</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>M</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>In Design</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-</td>
<td>I/D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Drill and Practice</strong></td>
<td>Everyday Math</td>
<td>IDM</td>
<td>I/D</td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Word Processing</strong></td>
<td>UWCC</td>
<td>ID</td>
<td>M</td>
<td>--</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MS Word</td>
<td>--</td>
<td>ID</td>
<td>D</td>
<td>M</td>
<td>--</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Open Office</td>
<td>--</td>
<td>ID</td>
<td>D</td>
<td>M</td>
<td>--</td>
<td>-</td>
<td>-</td>
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<td><strong>Keyboarding</strong></td>
<td>Informal lessons</td>
<td>I</td>
<td>D</td>
<td>--</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Formal lessons</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Multimedia/Presentation</strong></td>
<td>Powerpoint</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>M</td>
<td>--</td>
<td>-</td>
</tr>
<tr>
<td>Hyperstudio</td>
<td>I</td>
<td>D</td>
<td>M</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>United Streaming</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Digital Storytelling</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
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<td>-</td>
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<tr>
<td>Citing Sources</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Internet</strong></td>
<td>Responsible Use/ Ethics</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>-</td>
</tr>
<tr>
<td>On-line Classes/ Blackboard</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Research</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wikis</td>
<td>--</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Blogging</td>
<td>--</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Online Safety</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>M</td>
<td>--</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Email</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>I/D</td>
<td>IDM</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Web Design</td>
<td>--</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spreadsheet &amp; Graphing</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Information Gathering and Analysis</strong></td>
<td>Database (creation)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>I</td>
<td>D</td>
<td>-</td>
</tr>
<tr>
<td>Destiny</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>
### Student Competencies Worksheet

<table>
<thead>
<tr>
<th>Content/Standard</th>
<th>Software/Skill</th>
<th>K-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7-8</th>
<th>9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Database</td>
<td></td>
<td></td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>M</td>
</tr>
<tr>
<td>Project LTW</td>
<td></td>
<td></td>
<td></td>
<td>I</td>
<td>D</td>
<td>D</td>
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</table>

**Specialized Programs**

<table>
<thead>
<tr>
<th>Software/Skill</th>
<th>K-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7-8</th>
<th>9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphic Arts</td>
<td></td>
<td></td>
<td>I</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Video Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IDM</td>
</tr>
<tr>
<td>MicroWorlds</td>
<td></td>
<td>I</td>
<td>D</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>PDA/Handheld technology</td>
<td></td>
<td>I</td>
<td>D</td>
<td></td>
<td></td>
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</tbody>
</table>

**Other**

<table>
<thead>
<tr>
<th>Software/Skill</th>
<th>K-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7-8</th>
<th>9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptops</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ID</td>
</tr>
<tr>
<td>FACE – Central City Software</td>
<td></td>
<td></td>
<td>I</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>
Goal #1 (continued)
Professional Development Activities

Oconomowoc Area School District uses professional development to improve staff skills and competencies needed to improve student achievement. Good professional development includes strong content and a process for ongoing decision-making. OASD coordinates staff training via its Professional Development Council (PDC). The PDC reviews a variety of data before approving professional development requests. For example, staff Tech Competency survey results indicated several training needs for teachers in 2005-06 including Smart Boards, Digital Camera Basics, Internet Safety, and IntelliTools among others. These opportunities were extended and enhanced in subsequent years (see Table).

Information Technology Professional Development Opportunities and Attendance

<table>
<thead>
<tr>
<th></th>
<th>2006-07</th>
<th>n</th>
<th>2007-08</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTEL “Teach to the Future” ...</td>
<td>12</td>
<td></td>
<td>INTEL ...........................................</td>
<td>8</td>
</tr>
<tr>
<td>INTEL .......................</td>
<td>11</td>
<td></td>
<td>Integrating Video &amp; Online Resources ...</td>
<td>8</td>
</tr>
<tr>
<td>INTEL .......................</td>
<td>11</td>
<td></td>
<td>Digital Delivery ..................................</td>
<td>10</td>
</tr>
<tr>
<td>IntelliTools Classroom ........</td>
<td>9</td>
<td></td>
<td>Digital Delivery ..................................</td>
<td>10</td>
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<tr>
<td>Become an &quot;Excel&quot; lent User ...</td>
<td>5</td>
<td></td>
<td>Teacher Web Page Using the CMS ..........</td>
<td>15</td>
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<tr>
<td>Intermediate PowerPoint ......</td>
<td>6</td>
<td></td>
<td>Smart Board's Latest Tools .................</td>
<td>16</td>
</tr>
<tr>
<td>Intermediate Publisher .......</td>
<td>6</td>
<td></td>
<td>Database &amp; the Invisible Web ............</td>
<td>1</td>
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<tr>
<td>Effective Integration of Technology in the Classroom ...</td>
<td>9</td>
<td></td>
<td>United Streaming ................................</td>
<td>5</td>
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<tr>
<td>Using INTEL Digital Delivery ....</td>
<td>16</td>
<td></td>
<td>Interactive Video Games ....................</td>
<td>5</td>
</tr>
<tr>
<td>Skyward User Group ............</td>
<td>10</td>
<td></td>
<td>Online Teacher Resources ..................</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Digital Video ..................................</td>
<td>15</td>
</tr>
</tbody>
</table>

Attendance | 92 |

Staff Tech Competency Survey Results @
(http://www.oasd.k12.wi.us/Administrative/RTA/Research/TechnologyCompetencies.oasd)
Goal #1 (continued)
Implementation of best practices

A research-based framework for implementing “best practices” instruction in information literacy and instructional technology was identified and implemented by

- reviewing current research-based frameworks for information literacy to unify practice;
- selecting an instructional framework for information literacy;
- providing staff development for the selected framework;
- analyzing the District’s software collection, identifying needs & anticipating replacement needs;
- developing a software evaluation tool;
- collecting data related to programming and identify future needs; and
- investigating a decision-making matrix for technology decision-making.

Current research and best practices in information literacy and instructional technology was also facilitated through a liaison between our district technology coordinator and UW Madison’s Educational Computing Technology Program. The technology coordinators dual role as ECT graduate student and program coordinator offered accessibility to current research-based frameworks. The research and frameworks, in turn, were shared and discussed with district LMT personnel and provided a basis to develop the Student Competency Matrix, which naturally facilitated an evaluation of existing software and programming - necessitating a review of professional development opportunities.
Goal #2.  
LMT Resources will be used to manage district and school resources.

Objective 2.1  
Access to information and computing resources will be increased at the student-, classroom-, and school-level

The OASD improved access to its information and computing resources by reviewing placement of instructional computers and redistributing among schools to improve equity. The District added to its computer inventory and reduced its computer replacement cycle to three years by financing its technology via a leasing agreement. Oconomowoc also introduced wireless and handheld computing technologies, and added a full-time computer/network technician to improve support.

Staff analyzed computer placement at each school.
Computers

Access to LMT resources has improved as measured by student-to-computer ratios (see Table). On average, there were 4.7 students per instructional computer in 2007 representing a -0.5 decrease. This reduction is significant given rising student enrollments in 2006-07 and 2007-08. In addition, the District added 90 wireless notebook computers and 30 handheld devices to its inventory. Ninety-five (95) to 98 percent of Oconomowoc parents indicate via annual surveys that their children have home access to a computer and the Internet.

Student-to-Computer Ratios by Site
Oct 22 2007

<table>
<thead>
<tr>
<th>Site</th>
<th>Students</th>
<th>Total PCs</th>
<th>Classroom PCs</th>
<th>Student to PC Ratio</th>
<th>Student to Classroom PC Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenland El</td>
<td>473</td>
<td>80</td>
<td>30</td>
<td>5.9</td>
<td>15.8</td>
</tr>
<tr>
<td>Ixonia El</td>
<td>194</td>
<td>59</td>
<td>17</td>
<td>3.3</td>
<td>11.4</td>
</tr>
<tr>
<td>Meadow View El</td>
<td>519</td>
<td>82</td>
<td>30</td>
<td>6.3</td>
<td>17.3</td>
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<tr>
<td>Oconomwoc Hi</td>
<td>1,489</td>
<td>392</td>
<td>121</td>
<td>3.8</td>
<td>12.3</td>
</tr>
<tr>
<td>Oconomwoc Mi</td>
<td>690</td>
<td>189</td>
<td>34</td>
<td>3.7</td>
<td>20.3</td>
</tr>
<tr>
<td>Park lawn El</td>
<td>530</td>
<td>112</td>
<td>31</td>
<td>4.7</td>
<td>17.1</td>
</tr>
<tr>
<td>Summit El</td>
<td>566</td>
<td>108</td>
<td>29</td>
<td>5.2</td>
<td>19.5</td>
</tr>
<tr>
<td><strong>Total/Avg</strong></td>
<td><strong>4,461</strong></td>
<td><strong>1,022</strong></td>
<td><strong>292</strong></td>
<td><strong>4.7</strong></td>
<td><strong>16.2</strong></td>
</tr>
</tbody>
</table>
Virtual Learning

Oconomowoc students have many opportunities to participate in virtual learning experiences. Teachers use Smart Boards, United Streaming/Digital Video, and online courseware, among other applications, to enhance instruction and learning. Several examples of virtual learning are given below.

United Streaming

Many Oconomowoc teachers incorporate Discovery Education streaming into classroom activities. This is a digital video-on-demand and online teaching service to help improve students' retention and test scores; it is also aligned to state standards.

Multi-User Virtual Environment (MUVE)

Oconomowoc sixth grade science students participated in an interactive computer simulation as part of a research project through Harvard University. The simulation used MUVE technology designed to enhance student learning and motivation in science. The project focused on epidemiology, scientific inquiry and experimentation. Students encountered clues to a problem plaguing the 19th century River City. As they explored, students

- formed and tested a hypothesis regarding the health and environmental issues they have discovered;
- designed a procedure with a control and experimental group using current and historically accurate tools to investigate their hypothesis;
- gathered and organized data;
- drew conclusions from evidence and made inferences based on observed patterns;
- reported on the experiment and conclusions;
- shared and synthesized results; and
o critiqued the process and results.

**This project utilized PDA-based simulations with GPS technologies to create a virtual world layered on top of a real-world context.** Students carried PDAs as they walked around in the real environment. As they walked, their devices triggered and displayed items such as photos, video clips, text documents, and statistics. As the game progressed, students gathered data to identify various points of view, develop arguments, and present and defend their conclusions.

Oconomowoc 7th grade students also participated in an Augmented Reality Game that infused technological, interactive, and place-based learning. Using **Riverside Park** in Milwaukee as their game board along with handheld computers and GPS units, teams of students simulated professional roles to investigate the impact of development on park wildlife and how park users interact within a natural environment. The 10-day curricula culminated with an in-class city council meeting to present findings based on technology-assisted data collected in the park.

**TECHNOLOGY EDUCATION**

Oconomowoc Technology Education classes based on Project Lead the Way (www.pltw.org/index.cfm) curriculum are activity oriented and geared to giving student extensive exposure to technology related fields and processes. The study of design and modeling, the magic of electrons, the science of technology, and robotics and automation is blended into 7th and 8th grade technology six week and nine week courses.

Technical Education classes are heavy users of computer technology. Technical Drafting is heavily integrated with AutoCAD software (also used by Waukesha County Technical College). Inventor is used in 3D Modeling and Project Lead the Way courses to design objects/products. 3D Viz, a 3D modeling/animation program used to render images, is used in 3D Modeling and Project Lead the Way courses. It is a good program to create presentations of products and projects.

Architectural Drafting and Project Lead the Way courses rely on Architectural Desktop as the main tool used to design and draw residential and commercial architectural plans.

**MORE TECHNOLOGY IN THE CLASSROOM**

The Oconomowoc High School Math Department uses computer technology in a variety of ways. The use of handheld computers (graphics calculators) is instrumental in helping students make connections as we approach problems numerically, algebraically and graphically. The technology permits higher-level problem solving, analysis and synthesis with real world data. The CBL (calculator-based laboratory) is a data collection device that links to the calculator so that we can do our math modeling analyzing our own data.
Microsoft Excel is used by students to apply the concept of variable and the important use of formulas in some everyday life situations. The spreadsheet cell is the easiest way to teach what "x" is all about. Moreover, of course, students use the Internet to research different math topics.

Computer simulations are conducted in Astronomy permitting data collection that spans many days or even years. The Virtual Astronomy program allows for simulations where variables can be controlled and manipulated. This exercise gives students a feel of the process astronomers' use in real life. The technology also allows Internet access to simulation from classification of spectrum of stars to operation of radio telescopes. The technology is a critical and essential part in the teaching of Physics and astronomy.

Labs (both AP Chemistry and regular Chemistry) use the computer interfaces with lab probes to take lab data in real time while generating data tables and graphs of the events. This includes but is not restricted to temperature probes, ph probes, colorimeters, voltmeters, and pressure sensors. Labs include ph meter titration, Boyles Law, Charles Law, Beer's Law, Specific Heat Labs, Heat of Combustion, Electrochemistry, Keq of a reaction, Specific Heat of a Metal, Ka of a Weak acid, Titration of a Polyprotic acid, and more. Computers are used in AP chemistry for tutorials and Internet work, and in the nuclear chemistry unit for research on half-life and types of radiation (we choose not to do labs with radiation).

The High School Business Education Department uses computer technology to give students experiences in desktop publishing, accounting, creating resumes and business/marketing presentations, developing a school yearbook, researching marketing/culinary/life skills etc.

Guidance and Counseling access to computers plays a major role in the day-to-day survival of counselors (locating students, monitoring attendance, contacting parents, etc.). Also, counselors, students, parents and instructors access career, college, and scholarship information through the ECOS (Education and Career Opportunity System) program and have direct access to a myriad of "counseling resources" found on the counseling web page located on the OHS web site.

**STUDENTS CREATE ONLINE PORTFOLIOS**

A trend in today's job market is the use of e-portfolios. Middle school students in the Computer Applications classes use Dreamweaver software to create electronic portfolios as an integrated project with a Social Studies class. The project grew to include links to work samples and personal achievements. Some students shared their portfolios during parent-teacher-student conferences.

Oconomowoc Middle school students create and share e-portfolios.
Goal #2. (continued)
Secure remote access to network resources

Student Access

The OASD implemented several solutions permitting students to securely access network resources from home. The most frequently used resource is Family / Student Access, which is a component of the District’s student information system. This tool allows students and parents a remote view of attendance, class assignments, fees, discipline referrals, schedules, and grades via the Internet. Students can also access their network files via NetStorage (NS). NS is a quick and easy way to transfer files from school to a home computer, and vice versa. The following figure shows several online resources available to Oconomowoc students and parents via the OASD website.

Online Resources for Oconomowoc Students

I LOVE how accessible the school info is to parents with family access and teachers having their e-mails at just a click through the program. MAKES OUR JOBS AS TEACHERS MUCH EASIER!!

-Oconomowoc Staff Survey (May 2008)
Goal #2. (continued)
Secure remote access to network resources

Staff Access

Oconomowoc staff members have remote access to network resources via the District’s Intranet (see below). Virtual Office allows secure access to e-mail, voicemail, and network files. Educator Access Plus (EA Plus) is another web-based application that permits access to student information and grading via an Internet connection. Special education staff can also update IEP and related records remotely.

Staff members have secure remote access to their payroll information, vacation, and sick time. Technology and maintenance requests may be submitted via the Intranet page while school web page updates can also be made remotely.

Online Resources for Staff
(e-)Instructional Content

Oconomowoc students have access to online learning resources like eLibrary, BadgerLink, Newsbank, Social Issues Researcher, LitFinder (Poetry and Short Story) Opposing View Points, World Book Encyclopedia, ProQuest (historical newspaper search), eBooks, etc. Students may access the resources from any school computer. Several of these online database resources are available to students from home as well.

An e-Version of Oconomowoc’s instructional content is available throughout the organization. Resources include library holdings, periodical databases, organized Internet content, and distance learning content.

Destiny Library Manager™ combines circulation, cataloging, searching, reporting and management in one central library system. Students and staff access the system through any workstation with a supported web browser allowing district-wide searching, interlibrary loan, holds, reporting, and system administration. The system also strengthens the library/classroom connection by matching titles to students’ reading levels, aligning collection materials to standards, providing safe web searching, and streamlining cataloging of non-print materials.

Example of Online Instructional Content
Oconomowoc teachers piloted several e-learning tools including Moodle and Blackboard. Moodle (http://moodle.org/) is a free course management system designed to help educators create effective online learning communities. The Blackboard Learning System™ (http://www.blackboard.com/) is a family of software applications designed to enhance teaching and learning. Teachers can create content, develop custom learning paths for students, facilitate student participation, and evaluate students' work using a set of assessment capabilities. Screenshots of course activities using Moodle and Blackboard are provided below.
Goal #2. (continued)

Proficient users of educational technology

Objective 2.2
All staff will demonstrate proficiency on the District’s Educational Technology Competency assessment

Oconomowoc’s Educational Technology Competencies (ETC) rubric was revised and developed into an online self-assessment questionnaire for staff members. The 100+ item survey collects perceptions about tech competency in several key areas. The ETC has also been used in the District’s hiring process.

The ETC was administered to staff members in 2004 and 2005. Results indicated improvement in most assessed areas (see excerpt below). Deficiencies were addressed via professional development, school improvement activities, and annual staff orientation activities.

Tech Competency Categories assessed via the ETC Survey
- BASIC COMPUTER SKILLS
- BASIC COMPUTER SETUP, MAINTENANCE, & TROUBLESHOOTING
- BASIC TECH SERVICES HELP DESK SKILLS
- BASIC SKYWARD SKILLS
- BASIC WEB PAGE SKILLS
- BASIC E-MAIL/GroupWise SKILLS
- BASIC PHONE SYSTEM SKILLS
- EMERGING TECHNOLOGY SKILLS
- WORD PROCESSING/DESKTOP PUBLISHING SKILLS
- SPREADSHEET/GRAPHING SKILLS
- DATABASE SKILLS
- INTERNET/WORLD WIDE WEB (WWW) SKILLS
- MEDIA COMMUNICATIONS (INCLUDING IMAGE & AUDIO PROCESSING SKILLS
- MULTIMEDIA INTEGRATION SKILLS
- LEGAL & ETHICAL ISSUES

ETC results are posted to the OASD website @ http://www.oasd.k12.wi.us/Administrative/RTA/Research/TechnologyCompetencies.oasd

<table>
<thead>
<tr>
<th>Task Description</th>
<th>2004</th>
<th>2005</th>
<th>Improvement</th>
<th>ETC Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a database with multiple fields and records.</td>
<td>13.9%</td>
<td>34.2%</td>
<td>21.3%</td>
<td>8,549</td>
</tr>
<tr>
<td>Create custom report layouts.</td>
<td>12.2%</td>
<td>28.9%</td>
<td>16.7%</td>
<td>11,432*</td>
</tr>
<tr>
<td>Insert database fields into a word processing document.</td>
<td>15.7%</td>
<td>34.2%</td>
<td>11.5%</td>
<td>11,577*</td>
</tr>
</tbody>
</table>

INTERNET SKILLS
- Access and use resources on the Internet/WWW.                                      | 90.1%| 90.1%| 0%          | 5,736     |
- Use specialized e-mail lists (Listserv) relevant to professional information needs.| 96.5%| 92.1%| 4.4%        | 5,526     |
- Use search engines to browse resources on the Internet/WWW.                        | 58.3%| 57.9%| 0.4%        | 3,486     |
- Use distance learning, desktop video conferencing and teleteaching technologies.  | 92.2%| 89.5%| 2.7%        | 3,458     |

MULTIMEDIA INTEGRATION SKILLS
- Produce print-based products (e.g., newsletters, brochures, posters, books).      | 76.5%| 68.4%| 8.1%        | 5,230     |
- Produce electronic slides/overheads.                                              | 50.4%| 35.3%| 15.1%       | 11,239*   |
- Set up and operate a videocassette DVD recorder/player and monitor/TV.            | 73.0%| 68.4%| 4.6%        | 7,880     |
- Connect a multimedia projector to a computer for large screen display.            | 36.5%| 36.8%| 0.3%        | 15,791*   |
- Use a digital camera and scanner.                                                 | 48.7%| 60.5%| 11.8%       | 9,874     |

Notes: *p < .05, **p < .01, p > Higher percentage of “I can do” responses compared to previous school year. Blue Type = indicates significant difference among grade levels.
Objective 2.3
The District will improve integration of its electronic systems so that each system informs the other, so repetitive data entry and information analysis is eliminated, and data reliability increases.

The District worked to improve its network infrastructure and integrate its information systems. System evaluations were conducted by Cisco Systems and Skyward Inc. According to the reviewers, OASD’s network is well designed and maintained, especially compared with similar Wisconsin school systems. Several network improvement recommendations flowed from the analysis including:

- Investment in a Storage Area Network to provide secure, scalable storage for critical District data;
- Implementation of Novell Cluster Services software to provide failover in the event of an unplanned server failure;
- Investment in a new data center that provides security and expansion abilities for the District’s critical technology investments;
- Investment in a core switching infrastructure that is scalable to the growing needs of the District;
- Investment in a centralized backup solution for the District’s valuable data. This solution should include Backup-to-Disk features and offsite storage;
- Investment in a School Interoperability Framework to unify data sources and provide streamlined user administration and access control; and
- Investment in fiber optic connections between schools to provide highly scalable links and a high quality of service, while reducing monthly service expenditures.

OASD implemented several of the network recommendations including investment in its Storage Area Network or SAN and moving student databases to a secure offsite host. The District Tech Center was upgraded to improve operational effectiveness due to network growth, implementation of a VoIP phone system, Terminal Server for remote access, implementation of a new District library system, implementation of an e-mail retention system, addition of a workstation patch management server, and a digital video camera system at OHS.
Goal #2. (continued)
Network and information system improvements

Information System Integration

Additions to the District’s student and management information systems (e.g., Skyward’s Special Education module & Educator Access+ for grading, attendance, discipline, Student Access, Parent Access, Principal Access, etc.) improved integration, data entry, record keeping, and reporting. Ongoing training is required to assure staff members are proficient in the operation of information and management systems.

The OASD uses Skyward Student, Finance and Human Resources Administrative software

http://www.skyward.com/Products/Software_Systems.asp
Objective 2.4

Technical support will be improved by addressing needs in upfront planning and cost analysis.

The annual budget for LMT initiatives is guided by the District’s Strategic Plan, which identifies the long-term direction and goals of the school system. All budget decisions affirm Oconomowoc's commitment to (1) provide quality and innovative programming; (2) grow and manage resources, and (3) strengthen, maintain and promote a healthy organization. The Business Office develops and distributes a budget development calendar each fall. Preliminary discussions of District-wide priorities, revenue forecasts, enrollment projections, school schedules, and staffing priorities begin the conversations. Individual administrative departments and school teams meet with the Superintendent and Assistant Superintendent (and others, as needed) to discuss specific budget needs and to review budget worksheets. Several iterations of these meetings occur over the school year. A final budget proposal is presented to the Board of Education during a spring business meeting.

The goal-based and upfront planning phase of the budgeting process has improved the availability and cost-effectiveness of Library Media and Technology resources in recent years. For example, the District's computer inventory was increased via equipment leasing instead of purchase. The leasing agreement has also reduced the District's computer replacement cycle from five or six years to three years! Upfront planning and cost analysis also indicated a need for an additional technician position and an information system specialist.

Wireless anyone?
Goal #3.  
LMT resources will be used to build relationships with stakeholders.

Objective 3.1  
The District will continue to offer literacy opportunities to Oconomowoc community members.

The Oconomowoc Public Library (http://www.wcfls.lib.wi.us/opl/) is a key provider of adult literacy resources and opportunities. Waukesha County Technical College (http://www.wctc.edu/) also offers many learning opportunities for adult learners. Support and development of Critical life skills like writing and grammar is integrated into student services.

Oconomowoc community members can also access BadgerLink through the OASD website (http://www.oasd.k12.wi.us/Family/Resources/index.oasd). BadgerLink is a project of the Wisconsin Department of Public Instruction (DPI), Division for Libraries, Technology, and Community Learning. Its goal is to provide access to quality online information resources for Wisconsin residents in cooperation with the state's public, school, academic, and special libraries and Internet Service Providers. Most libraries also provide access to BadgerLink from public access computers within the library.

The Department of Public Instruction currently contracts with five vendors (EBSCO, ProQuest, Thomson Gale, Newspaper ARCHIVE, and TeachingBooks) to provide access to articles from thousands of newspaper and periodical titles, image files, and other specialized reference materials and websites. Users can find access to over 11,000 periodical titles and over 700 newspapers (including Wisconsin newspapers), children’s and adult literature, business, medical, and education sources, and many other specialized resources not available through regular internet search engines. BadgerLink also connects users to WISCAT (the online catalog of Wisconsin library holdings) OCLC WorldCat (an international database of library holdings), directories of libraries, access to library digitized collections, and other information.
Objective 3.2

The District will form strategic partnerships with community organizations and businesses to improve and increase LMT resources.

The Oconomowoc Area School District has collaborated with area organizations, businesses, and industries to improve and expand technology resources. For example, the Gateway to Technology (GTT) program was introduced in 2005 and geared toward giving students extensive exposure to technology-related fields and processes. It integrates four 10-week units each designed specifically for grades six through eight. This program was supported via partnerships with the Kern Family Foundation, Milwaukee Foundation, Milwaukee School of Engineering and Marquette University.

Introduction of the Gateway to Technology (GTT) program was supported via partnerships with the Kern Family Foundation, Milwaukee Foundation, Milwaukee School of Engineering and Marquette University.
Summary

The Oconomowoc Area School District made significant progress toward its information and technology goals. Work will continue on partially achieved goals while also investigating, testing, and implementing information technologies for student achievement, employability and lifelong learning. Meaningfully integrated instructional practices emphasizing engaged learning will guide our educational technology organization and delivery of instruction. Professional development and staff practices will reflect technology literacy goals in an increasingly digital age.
IV. Needs Assessment

Evaluation of Oconomowoc's 2008 LMT plan showed much progress toward goal achievement. An additional needs assessment is presented in this section. Multiple data sources were used to identify strengths and weakness in the areas of student achievement, educator proficiencies and practices, access to information and learning tools, and support systems and leadership. An inventory of the District's resources and fixed assets is also presented.

Student Proficiency

Student Achievement

Wisconsin public school students in grades 3 through 8 and 10 are required to take the Wisconsin Knowledge and Concepts Exams (WKCE) each school year. The standardized tests measure achievement in core academic areas and assess student achievement against Wisconsin’s Model Academic Standards (1998), which include two of the information and technology literacy standards. The WKCE-assessed IT standards are

- **Media and Technology** - Students in Wisconsin will select and use media and technology to access, organize, create, and communicate information for solving problems and constructing new knowledge, products, and systems; and

- **Research and Inquiry** - Students in Wisconsin will access, evaluate, and apply information efficiently and effectively from a variety of sources in print, nonprint, and electronic formats to meet personal and academic needs.

**Media and Technology Standard**

Oconomowoc’s tenth-grade students earned a mean Media/Technology Standards Performance Index (SPI)* of 91.3 in 2004-05. This score was higher than the statewide average (87.6) and the District’s 2003-04 score (89.5). Please note, the MT standard is assessed at grade 10.

*The SPI estimates the number of questions that a student could be expected to answer correctly if there had been 100 such questions measuring that content standard on the test.
Research and Inquiry Standard

Oconomowoc’s students earned mean Research and Inquiry scores above statewide averages in 2006-07. Performance at grade four shows continuous improvement over several test occasions. The rate of improvement appears accelerated compared to statewide improvement.

<table>
<thead>
<tr>
<th></th>
<th>2006-07</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G. 4</td>
<td>G. 8</td>
</tr>
<tr>
<td>Oconomowoc</td>
<td>62.4</td>
<td>67.8</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>57.4</td>
<td>62.6</td>
</tr>
</tbody>
</table>

*The SPI estimates the number of questions a student is expected to answer correctly if there were 100 such questions on the test.

Research & Inquiry Trend Scores

Performance at grade four shows improvement over several test occasions.
Educator Proficiency

A purposively selected group of Oconomowoc educators completed the Level of Technology Implementation (LoTi) questionnaire in March 2008. The LoTi is designed to measure classroom technology use within student-based instruction ([http://www.loticonnection.com/whatisloti.html](http://www.loticonnection.com/whatisloti.html)). Tech use is categorized on a multi-point continuum (Level 0=Nonuse to Level 6=Refinement).

According to respondents (n=22), OASD is transitioning from exploratory use of technology (i.e., technology for knowledge acquisition) to an infused level (technology for analysis, synthesis, & evaluation). Examples of infused activities include

- Students use tool-based applications such as spreadsheets/graphing, concept mapping, and databases is used primarily for analyzing data, making inferences, and drawing conclusions from an investigation or related scientific inquiry;

- Students are involved with different forms of projects that require students to research information, draw conclusions from their research, and post them either to a web page or incorporate them into some form of multimedia presentation; and

- Students use the web for research purposes or interact with selected software requiring them to take a position or role-play an issue.

### Level 3: Infusion

The focus of classroom computer use is higher order thinking and problem solving related to critical content.
Professional Development and Mentoring Priorities

LoTi results also indicate professional development and mentoring priorities for survey takers. Oconomowoc staff development planners should consider professional development interventions and/or mentoring opportunities that will help staff improve their competence with complex thinking skill strategies. It is also recommended that staff development planners help educators locate additional resources and mentoring opportunities to increase classroom technology use.

Classroom Technology for Critical Thinking

Professional development opportunities should help staff further improve their confidence and competence with complex thinking skill strategies.
Effective Teaching and Learning Practices

The Current Instructional Practices (CIP) portion of the LoTi Questionnaire assesses classroom teachers' instructional practices relating to a subject matter versus a learner-based curriculum approach. CIP is categorized as Not True of Me Now; Somewhat True of Me Now; or Very True of Me Now. The District’s CPI score (4.0) falls within the “Somewhat True” category.

At this level, teachers feel comfortable supporting or implementing either a subject matter or learning-based approach given the instructional content. In a subject-matter based approach, learning activities tend to be sequential, student projects tend to be uniform for all students, the use of lectures and/or teacher-directed presentations are the norm as well as traditional evaluation strategies. In a learner-based approach, learning activities are diversified and based mostly on student questions, the teacher serves more as a co-learner or facilitator in the classroom, student projects are primarily student-directed, and the use of alternative assessment strategies including performance-based assessments, peer reviews, and student reflections are the norm.

Current Instructional Practice

OASD teachers feel comfortable implementing either a subject matter or learning-based approach given the instructional content.
Access to Information Resources and Learning Tools

Oconomowoc improved access to its information resources and learning tools as detailed in Section III. However, LoTi respondents indicated a need for vigilance in this area. Also, one staff member commented that "... our school could use more technology resources. Doc cameras, computer T.V. hook up, projectors. This would allow for united streaming clips, power point presentations, online educational games, and sites to be shown in the classroom." Time for learning and practice with classroom technology time was also apparent.
Support Systems and Leadership

The typical school system is not able to keep pace with the tremendous depth, breadth, and rate of technology change. Educational leaders are expected to make multimillion-dollar decisions about online/ virtual learning, telecommunications infrastructures, training programs, student Internet access, intranets, and software in volatile times of shorter and shorter obsolescence cycles, and a lack of clarity as to the real impact of technology on learning. Implementation of the following recommendations (as part of previously administered enGauge survey) may facilitate system and leadership development.

Research and Development

District and school resources should be allocated for research and development of student-centered technology and information systems. A Total Cost of Ownership approach should be used for near and long-term initiatives.

Systems Thinking and Process Reengineering

Success in process reengineering lies in the alignment of all processes, procedures, rules, regulations, and policies to support the improvement of student learning through technology. The transition to new systems requires intelligent, thoughtful leadership.

Administrator Proficiency

Administrators should meet and exceed accepted administrator technology standards. The implementation of those standards should be linked to job responsibilities. The District should establish a formal support structure among all administrators in support of this work.

Data-Driven Decision Making and Accountability

The District should continue evaluation of technology effectiveness at the student, classroom, school, and school system levels. A first step may be documenting what successful, effective practice looks like at each level, establishing associated measures, benchmarks, and sources of evidence.
LMT Resources and Fixed Assets

Analysis of the District’s LMT resources and assets are presented in this section. Software and hardware inventories are appended to this document. Centralized databases of District software, computing-related hardware, and audiovisual equipment are maintained by the administrative offices. Status statements are presented below.

Alignment of Information and Technology Literacy Standards to Local Curriculum

The OASD Library Media and Technology Academic Standards document covers media and technology, information and inquiry, independent learning, and learning community. Integrated content and performance standards are articulated for each area. The document informs daily instruction and curriculum development.

Learning Tools (computer / AV hardware)

An analysis of the District’s learning tools, instructional resources, tele-communications and technology infrastructure, and network is provided below. Related inventories and priority lists are appended to this document.

Hardware Inventory

The OASD network consists of approximately 1,100 workstations attached to building Local Area Networks (LANs) and 20 servers. Of the 1,100 workstations, about 200 are laptop computers; 10 carts with 15 each plus about 50 teacher and administration laptops. Voice over IP (VoIP), with 500 handsets including one in each classroom, is also supported on this network, and Power over Ethernet has been implemented.

Workstations are wired to Intermediate Distribution Frames at 10/100 mbps and from there to the school Main Distribution Facility router area with 1gbps fiber. The high school also has some 1gbps switches. Most classrooms have two to three network jacks. There are also 50 network printers and 25 copiers throughout the schools.

Instructional Resources (software /LM resources)

The “core” instructional software used by staff and students is listed below. These applications are available via the OASD network and/or online subscription. The District recently upgraded its MS Office suite (2007).
## OASD “core” instructional software

<table>
<thead>
<tr>
<th>Software Title</th>
<th>Grade Level</th>
<th>Purpose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Acrobat 8.1</td>
<td>K-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple QuickTime</td>
<td>K-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart Technologies</td>
<td>K-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bailey’s Book House</td>
<td>K-1</td>
<td>Reading skill reinforcement</td>
<td></td>
</tr>
<tr>
<td>Millie’s Math House</td>
<td>K-1</td>
<td>Math skill reinforcement</td>
<td></td>
</tr>
<tr>
<td>Trudy’s Time &amp; Place House</td>
<td>K-2</td>
<td>Telling time, seasons, sequencing, orientation</td>
<td></td>
</tr>
<tr>
<td>Sammy’s Science House</td>
<td>K-2</td>
<td>Seasons, weather, simple machines, habitats</td>
<td></td>
</tr>
<tr>
<td>Everyday Math Games</td>
<td>1-3</td>
<td>Reinforces math series</td>
<td>Mimics games that supplement text</td>
</tr>
<tr>
<td>Everyday Math Games</td>
<td>4-6</td>
<td>Reinforces math series</td>
<td>Mimics games that supplement text</td>
</tr>
<tr>
<td>MS Word</td>
<td>3-12</td>
<td>Word processing/document layout</td>
<td>Office 2007 upgrade. Also used for formal keyboarding instruction</td>
</tr>
<tr>
<td>MS Excel</td>
<td>4-12</td>
<td>Spreadsheet &amp; graphing</td>
<td></td>
</tr>
<tr>
<td>MS Publisher</td>
<td>3-12</td>
<td>Desktop publishing</td>
<td></td>
</tr>
<tr>
<td>MS Powerpoint</td>
<td>2-12</td>
<td>Presentation</td>
<td></td>
</tr>
<tr>
<td>MS Access</td>
<td>6-12</td>
<td>Database creation</td>
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<tr>
<td>PhotoStory 3</td>
<td>1-4</td>
<td>Digital storytelling</td>
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<tr>
<td>MovieMaker</td>
<td>3-12</td>
<td>Digital storytelling, movie making</td>
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<tr>
<td>Hyperstudio 4</td>
<td>2-8</td>
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<td>Upgrade in 08-09</td>
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<td>Timeliner 5</td>
<td>3-6</td>
<td>Timelines, sequencing, biographies</td>
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<tr>
<td>Kidspiration</td>
<td>K-3</td>
<td>Prewriting, story webs</td>
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<tr>
<td>Inspiration</td>
<td>3-12</td>
<td>Prewriting, planning and organizing presentations</td>
<td></td>
</tr>
<tr>
<td>Ultimate Writing &amp; Creativity Center</td>
<td>K-3</td>
<td>Prewriting, writing, online paint</td>
<td>To be replaced with Scholastic Keys writing software in 08-09</td>
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<tr>
<td>MicroWorlds</td>
<td>6-8</td>
<td>Problem solving, geometry</td>
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<td>MicroType 4</td>
<td>5</td>
<td>Keyboarding reinforcement</td>
<td>Follows formal keyboarding lessons</td>
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<tr>
<td>Clipart.com</td>
<td>K-6</td>
<td>Images</td>
<td>Online subscription, safe image searching</td>
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<tr>
<td>United Streaming</td>
<td>K-12</td>
<td>Video streams</td>
<td>Instructional and student access to clips</td>
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<td>Destiny</td>
<td>1-12</td>
<td>Library Search</td>
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<td>Project Lead the Way</td>
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<td>In Design</td>
<td>9-12</td>
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<tr>
<td>Central City</td>
<td>7-8</td>
<td>Family &amp; Consumer Education</td>
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<td>Enchanted Learning</td>
<td>K-2</td>
<td>Encyclopedia</td>
<td>Online subscription</td>
</tr>
<tr>
<td>WorldBook Online</td>
<td>2-12</td>
<td>Encyclopedia</td>
<td>Online subscription</td>
</tr>
</tbody>
</table>
Wide Area Network (WAN)

The District’s WAN consists primarily of T1 (1.55mbps) lines to the high school from each school’s MDF router in a star topology supporting both data and VoIP. There is one T1 line to each elementary school, the current middle school is across the street from the high school and a 1gbps fiber was installed. This school is being replaced by two intermediate schools that will each have 10mbps fiber to the high school. The high school has a 10mbps fiber Internet connection. The T1 and fiber are leased from AT&T; one exception being an elementary school in Verizon territory. Besides the two intermediate schools, a second T1 line is planned at four elementary schools.

With limited WAN capacity, school-based servers manage much of the work in efforts to minimize WAN usage. Each of the seven school buildings has a server running Novell Netware 6.5 for local domain control, file directory, local workstation files and backup, printers and copiers, imaging, policies and software management. They each have a PC that acts as a caching server for United Streaming Internet video usage.

Wide Area Network

The new Oconomowoc Intermediate Schools will be added to the District’s WAN beginning in 2008-09. Connectivity speeds will also be upgraded for the elementary schools.
Network Constraints

There is minimal infrastructure available from commercial carriers, and what is available is expensive. Even if cost was not an issue, fiber and bandwidth outside of additional T1 lines, is just not available. Most districts cannot bury or string their own fiber and tie into a broadband POP for high-speed Internet access. These constraints affect the implementation, use, and management of LMT-related technologies, specifically

- Centralized imaging of workstations;
- Growth of Internet connected workstations;
- Video conferencing;
- Use of internet-based streaming video;
- Centralized server consolidation/virtualization;
- Effective off-site back up;
- Offsite data mirroring;
- Performance of remote SIS and finance applications;
- Effective backup of school data;
- Centralized management and support;
- Off-site back-up or remote shadow location for disaster recovery;
- Use of mobile computing and wireless access throughout the district;
- Creativity and usage knowing there is not enough bandwidth; and
- Timely support of certain availability issues.

Local Area Networks (LANs) and Facilities

LANs exist in all Oconomowoc schools with cabling for video, voice, and data outlets. Electrical services have been upgraded. Each school has its own data server and domain controller, forcing a more complex environment than would be necessary if WAN capacity were not an issue. Network delays result in some loss of productivity when working with Software as a Service (SaaS) applications; like Skyward for SIS, finance and some special education programs.
Technology Support Program

The OASD Technology staff completed the Gate’s Technology Support Index to help identify potential issues. Several support domains (Equipment, Staffing & Processes, Professional Development, Enterprise Management) were evaluated. Oconomowoc’s support program received marks ranging from satisfactory to highly efficient. Suggestions for improvement include reducing the computer-to-technician ratio to <250, consolidating server resources to minimize management and overhead costs, and implementing thin-clients for administrative applications that have little or no multi-media requirements.

Technology Support Index for Oconomowoc Area School District

<table>
<thead>
<tr>
<th>Support Standard</th>
<th>Low</th>
<th>Moderate</th>
<th>Satisfactory</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Focuses upon consistent equipment and software decisions that directly affect quality of support.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Staffing &amp; Processes</strong></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Addresses technical assistance staffing and the support practices used that impact efficiencies in support.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Professional Development</strong></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Considers how professional development can change the organizational support requirement and impact a team’s ability to provide support.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4. Enterprise Management</strong></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Identifies strategies that capitalize upon the technology itself to provide strong support.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tech support has been great from both building LRT, district techs, and especially for special education paperwork. ---Oconomowoc Staff Survey (May 2008).
V. GOALS, OBJECTIVES, and ACTION PLANS

This section of the Library Media and Technology Plan – 2011 addresses information and technology needs within the District’s strategic plan. Priorities were identified by cross-referencing findings from the review of relevant research, current plan status check, and needs analysis. This process, a form of triangulation, “surfaces” improvement areas.

An action plan is outlined for each objective including action steps, timeline, responsibility, budget, and evidence of success. Progress will be monitored and communicated annually. Adjustments to objectives and actions will be made, as needed.

Budget

Most of the funding for this plan will come from local tax dollars. State and federal initiatives will also provide some assistance. For example, E-Rate funding is available to offset telephone expenditures. The Common School Fund provides revenue to support electronic and print resources for school libraries.

Adult Literacy

Improving adult literacy is a District priority and will result in greater efficiency and use of technology investment, increase community sense of ownership, and develop greater awareness among adult stakeholders. The District will continue to identify and publish clear statements of its objectives and rationale for use of information and educational technology via newsletters, the Oconomowoc Television Network, building tours, and OASD website. Opportunities will be made available for outside groups to use the computer lab facilities after school hours. Online resources like Badger Link are accessible via the District’s web site.
GOAL 1.
LMT resources will be used to raise student achievement.

Objective 1.1
Student learning opportunities will be consistently infused with relevant, engaging, and research-based instructional and information technologies.

Action Steps

1.1A. Expand Augmented Reality Games and handheld and GPS technology opportunities.

   **Timeline:** 2008-2010
   **Responsibility:** Interested Intermediate school 6th grade staff
   **Evidence of Success:** Listing of Opportunities

1.1B. Participate in research study examining Web 2.0 technology's impact on complexity of practices in 8th grade technology elective focusing on Internet based content creation.

   **Timeline:** 2008-09
   **Responsibility:** Staff /students in 8th grade elective, Tech Coordinator
   **Evidence of Success:** Research Summary

1.1C. Begin exploration of epistemic games; virtual environments through continued participation in technology workshops, conferences, online research articles and coursework.

   **Timeline:** 2009-10
   **Responsibility:** Instructional Tech Coordinator
   **Evidence of Success:** Listing of Opportunities

1.1D. Expand I-Safe Curriculum to grades 4-8, begin embedding Internet Safety YouTube public service announcement in Blackboard/Moodle.
1.1E. Instructional Tech Coordinator to serve as liaison between research on virtual environments and epistemic games and K-12 learning opportunities.

**Timeline:** 2008-2010

**Responsibility:** Instructional Tech Coordinator

**Evidence of Success:** Learning Connection

1.1F. Participate in UW Madison Augmented Reality Research group implementing South Shore Beach and Riverside Park Games, implement game design unit to play on handhelds in 6th grade curriculum

**Timeline:** 2008-2009

**Responsibility:** Participating 6th grade teachers and students

**Evidence of Success:** Research Summary & Game Design Unit

1.1G. Create an online web-site aggregator to persistently investigate emerging technologies.

**Timeline:** 2009-2010

**Responsibility:** ITT Staff, Tech Support Staff

**Evidence of Success:** web-site aggregator
**Objective 1.2**

Consistent technology opportunities for students will be offered at each grade level.

**Action Steps**

1.2A. Develop a new worksheet for K-12 student competencies that addresses skills of online collaboration and social media.

   **Timeline:** June 2008
   **Responsibility:** ITT Staff
   **Evidence of Success:** K-12 Worksheet

1.2B. Review existing software to consider upgrades, additions, online subscriptions.

   **Timeline:** 2008-09
   **Responsibility:** ITT Staff, Site Tech Teams
   **Evidence of Success:** Purchase Matrix

1.2C. Create and implement formal program addressing ethics, etiquette and safety regarding online and offline behavior in K-12 curriculum.

   **Timeline:** 2008-09
   **Responsibility:** ITT Staff, Classroom Teachers
   **Evidence of Success:** EES Curriculum

1.2D. Revise technology curriculum in grades 5, 6, and 7, inclusive of a social media-based design cycle, to align with Middle Years Programme (International Baccalaureate) and Wisconsin Technology/Media Standards.

   **Timeline:** August 2008
   **Responsibility:** Intermediate ITT Staff, Instructional Tech Coordinator
   **Evidence of Success:** Revise Technology Curriculum
Objective 1.3

Staff and students will collaborate to share ideas, information and content.

Action Steps

1.3A. Rewrite curriculum for 8th grade technology elective to include collaborative opportunities with Internet-based content creation.

- **Timeline:** August 2008
- **Responsibility:** Intermediate ITT Staff, Tech Coordinator
- **Evidence of Success:** 8th Grade Technology Elective - Revised

1.3B. Continue piloting online learning management platforms i.e. Blackboard or Moodle for intended implementation during 2008-09 school year in grades 9-12, consider expansion to grades 7-8 during 09-10 school year.

- **Timeline:** August 2008
- **Responsibility:** Participating Intermediate / High School Staff, ITT Staff
- **Evidence of Success:** Pilot Program Summary

1.3C. Participate in monthly Instructional Technology Team Meeting

- **Timeline:** Ongoing
- **Responsibility:** Site Technology Teams
- **Evidence of Success:** Meeting Minutes

1.3D. Continue Site Technology Team Meetings

- **Timeline:** Ongoing
- **Responsibility:** ITT Staff
- **Evidence of Success:** Meeting Minutes

1.3E. Create staff and student Wiki spaces as needed to share ideas and content.

- **Timeline:** 2009-2010
- **Responsibility:** ITT Staff, Participating Classroom Teachers
- **Evidence of Success:** Wikis
1.3F. Develop a program for audio/video production targeting grades 7 and 8 during the 2009-10 school year; consider expansion to grades 9-12 in succeeding years.

**Timeline:** 2009-10

**Responsibility:** Tech Coordinator, Technology Support Staff, ITT Staff

**Evidence of Success:** Audio/Video Program
Objective 1.4

Sustained teacher training / professional development opportunities will focus on integration of instructional and information technology into complex student learning practices.

Action Steps

1.4A. Schedule professional development offerings in the following areas: Web 2.0 technologies (blogs, wikis, podcasts, video uploads), online learning systems (Blackboard/Moodle), Smartboard Technology, United Streaming, digital storytelling/Movie Maker, webpage development, and MS Office.

Timeline: 2008-09

Responsibility: ITT Staff, PDC

Evidence of Success: Web 2.0 Offerings
GOAL 2.
LMT resources will be used to manage district and school resources.

Objective 2.1
Access to instructional and information technologies, especially within the classroom, will be improved for all students and staff.

Action Steps

2.1A. Monitor computer and other tech hardware inventories. Maintain student-to-computer ratios to $\leq 5.0$.

**Timeline:** Ongoing

**Responsibility:** RTA Director, Network Manager, Tech Cabinet

**Evidence of Success:** Student-to-Computers Ratios

2.1B. Establish and communicate a District-Wide Technology Ordering and Approval Process to improve the purchasing policies and the deployment process by standardizing our instructional and information technologies with our Hardware and Software Recommended List.

**Timeline:** 2008-09

**Responsibility:** RTA Director, Network Manager, Tech Cabinet

**Evidence of Success:** Published Hardware & Software Recommended List

2.1C. Reorganize District-Wide software and hardware inventory system with defined and communicated processes and procedures.

**Timeline:** 2008-09

**Responsibility:** Network Manager, Tech Staff

**Evidence of Success:** System documentation
2.1D. Reorganize the three-year leased computer models by location to simplify the deployment and return, which will improve availability and planning.

**Timeline:** 2008-2011

**Responsibility:** Network Manager, Tech Staff

**Evidence of Success:** Reorganization and Deployment Chart
Objective 2.2

The District’s Wide and Local Area Networks will support the addition of two new schools, expanded use of Web 2.0 tools, 21st century learning tools, information systems, and communication systems.

Action Steps

2.2A. Implement Virtualization and Clustering with a Storage Area Network (SAN) to provide load balancing and failover in the event of an unplanned server failure, which will increase the reliability and availability of our operations.

**Timeline:** 2008-11

**Responsibility:** Network Manager, Tech Services Staff

**Evidence of Success:** SAN Implementation

2.2B. Continue investigation and upgrade of the network infrastructure, servers, and storage area networks as required by application software and curriculum needs. (Life-Cycle Management)

**Timeline:** 2008-11

**Responsibility:** Network Manager, Tech Services Staff

**Evidence of Success:** Annual Summary

2.2C. Implement a multi-tiered backup solution for the District’s valuable data. This solution should include Backup-to-Disk features and offsite storage for disaster recovery. (Disaster-Recovery Strategic Plan)

**Timeline:** 2008-11

**Responsibility:** Network Manager, Tech Services Staff

**Evidence of Success:** Implementation of Solution

2.2D. Implement a School Interoperability Framework (SIF) to unify data sources and provide streamlined user administration and access control.

**Timeline:** 2008-11

**Responsibility:** Network Manager, Tech Services Staff

**Evidence of Success:** SIF
2.2E. Investigate installation of fiber optic connections between schools to provide highly scalable links and a high quality of service, while reducing monthly service expenditures.

**Timeline**: 2008-11

**Responsibility**: Network Manager, Tech Services Staff

**Evidence of Success**: Fiber Proposal and Plan

2.2F. Improve network security controls and physical security facilities of the network operations center and building wiring closets should be reviewed and improved.

**Timeline**: 2008-11

**Responsibility**: Network Manager, Tech Services Staff

**Evidence of Success**: Data Technology Center Facility
Objective 2.3

There will be adequate organizational structures/processes and staffing levels to support the addition of two new schools, Web 2.0 tools, 21st century learning tools, information systems, and communication systems.

Action Steps

2.3A. Review the organizational structure, roles, and responsibilities of Tech Services staff to improve technology support throughout the District HelpDesk System.

**Timeline:** 2008-09

**Responsibility:** RTA Director, Network Manager

**Evidence of Success:** Organizational Report

2.3B. Ensure and maintain a customer focus through teamwork, communication, collaboration, and recognition to improve end-to-end performance, reliability, availability, and data integrity as balanced by the resources needed for support.

**Timeline:** 2008-09

**Responsibility:** RTA Director, Network Manager

**Evidence of Success:** Customer Service Agreement

2.3C. Continuously improve services and products by evaluating systems and processes, and also provide ongoing training for employees.

**Timeline:** 2008-09

**Responsibility:** RTA Director, Network Manager

**Evidence of Success:** Organizational Report
GOAL 3.
LMT resources will be used to connect stakeholders.

**Objective 3.1**
The District will invest in systems and partner with local groups to strengthen literacy and communication.

**Action Steps**

3.1A. Access to online literacy resources will be available for students and other Oconomowoc community members.

**Timeline:** Ongoing  
**Responsibility:** Tech Cabinet  
**Evidence of Success:** Online Offerings

3.1B. The District's website will be transformed into an interactive learning and communication tool.

**Timeline:** 2008-2010  
**Responsibility:** Tech Cabinet  
**Evidence of Success:** Website Review

3.1C. The District will implement an automated parent communication system (phone, e-mail, text message).

**Timeline:** 2008-09  
**Responsibility:** Network Manager, School & Community Relations  
**Evidence of Success:** Successful implementation of system.

3.1D. The District will collaborate with local universities/colleges, organizations, and businesses to improve its information and computing resources.

**Timeline:** Ongoing
Responsibility: Tech Cabinet

Evidence of Success: Partnerships

Objective 3.2

The District will partner with local colleges to offer post-secondary technology education and/or training to community members and district employees in district computer labs.

Objective 3.3

The District will continue to encourage stakeholder awareness, interest and understanding of emerging technologies via Board of Education meeting broadcasts and school site ‘open house’ formats showcasing integrated technology and curriculum activities/projects.
VI. Communicating the Plan

Target Audience and Communication Strategy

The LMT plan will be communicated by a variety of means (print, verbal, electronic). Information will be posted to Oconomowoc’s website. Periodic press releases will expand community awareness of how the District invests resources in support of community expectations and needs.

Communication...

LMT plans and progress is reported in many ways including an e-newsletter.

RTA News
by Derick Kiger, Director

Improving Access to Instructional Technology
The Oconomowoc Area School District (OASD) is addressing access to instructional technology via its 3-year Combined Information and Technology Plan. Objective 2.1 states that “Access to information and computing resources will be increased at the student-, classroom-, and school-level.” A main action step is to reduce each school's student-to-computer ratio to <5:1 and student-to-classroom computer ratio to <10:1.

OASD has maintained an overall student-to-computer ratio of approximately 5.0 (see Table 1). However, the average ratio of students-to-classroom computers ($M = 15.5$) is well above national and Wisconsin ($M = 7.6$) benchmarks. Improving this ratio is key to effective use of educational technology and higher academic achievement. Several additional action steps are outlined in the Technology Plan. Click here to learn more

http://www.oasd.k12.wi.us/jahia/techapid/2897

Table 1. Number of Students to Instructional Computers in the Oconomowoc Area School District

<table>
<thead>
<tr>
<th></th>
<th>Total Instructional Computers (ICs)</th>
<th>Students</th>
<th>Student-to-ICs Ratio</th>
<th>ICs in Classrooms</th>
<th>Students-to-Classroom ICs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenland</td>
<td>468</td>
<td>79</td>
<td>5.92</td>
<td>30</td>
<td>15.60</td>
</tr>
<tr>
<td>Isonia</td>
<td>171</td>
<td>59</td>
<td>2.90</td>
<td>17</td>
<td>10.06</td>
</tr>
</tbody>
</table>
VII. EVALUATION AND REVISION

Monitoring and Evaluation
The District’s LMT will be monitored, evaluated, and revised each school year, if needed. Data sources and collection methods will be triangulated to assure plan requirements are met and strategies are effectively implemented. Periodic progress reports will be made to the Superintendent and other school leaders.

An annual report will also be provided to the Board of Education and made available to community members. The OASD Research, Technology, and Assessment Office will coordinate the monitoring and evaluation process. Key stakeholding groups will be identified and involved in data collection and interpretation, plan revision, and reporting.

Formative Evaluation
As per Wisconsin Department of Public Instruction recommendation, monitoring and evaluation will focus on the formative aspects of the LMT. Formative evaluation (FE) comprises those activities that provide feedback for improving a program, plan or process (Rossi, Freeman, & Lipsey, 1999). The main purpose of FE is to inform adjustments so that goals and objectives may be realized. Formative evaluation utilizes both quantitative and qualitative methodologies.
VIII. Conclusion

Oconomowoc’s Library Media and Technology Plan (LMT) supports the District's strategic direction by providing a unified program of information and technology services. Priority LMT needs are identified and addressed within the District’s three strategic goal areas of raising student achievement, effectively managing resources, and building a healthy organization.

The District will use its LMT resources to ensure robust learning opportunities and to support students’ acquisition of knowledge and skills needed for employability and lifelong learning. The plan reflects the mission and beliefs of the District and incorporates the planning framework recommended by the Wisconsin Department of Public Instruction.

The Oconomowoc Area School District would like to acknowledge the efforts and support of everyone who participated in the planning process. You are much appreciated! Thank you.
References & Resources

BadgerLink, Wisconsin Department of Public Instruction.  http://www.badgerlink.net/


No Child Left Behind (NCLB), http://www.ncela.org/policy/curve/overview.htm


Oconomowoc Public Library. http://www.wcfls.lib.wi.us/opl/


Project Lead the Way. www.pltw.org/index.cfm


Skyward Student, Finance and Human Resources Administrative software
http://www.skyward.com/Products/Software_Systems.asp


Waukesha County Technical College. http://www.wctc.edu/


Appendix A

District Strategic Plan
“Quality Schools for a Growing Future”

MISSION STATEMENT
The Oconomowoc Area School District, in partnership with the community, demonstrates its commitment to excellence by challenging students with a visionary innovative curriculum in a positive learning environment so that each student develops lifelong learning skills, values and knowledge to become a self-reliant, positive contributor to our community, democratic society, and the world.

Student Learning Goal: Provide Quality and Innovative Programming
1. Ensure accountability for consistent Best Practice Instruction
2. Implement programs presently identified
3. Prioritize implementation of future innovative programs

Resources Goal: Grow and Manage Resources
1. Provide up-to-date, attractive, and functional facilities
2. Maintain staff to support quality programs
3. Develop a priority-based budget process

Relationships Goal: Strengthen, Maintain and Promote a Healthy Organization
1. Actualize the Organizational Norms Rubric
2. Improve district communication
3. Establish a marketing strategy

BELIEFS
1. Student learning is our primary responsibility
2. Consistently demonstrating a commitment to excellence is the best way to achieve excellence
3. In treating others as we would like to be treated
4. All people can learn
5. Learning is a lifelong process
6. Mutual trust, caring and respect are essential to learning
7. Effective teaching maximizes student learning
8. Quality facilities enhance the learning environment
9. The school, the family, and the community are partners
10. Effective listening and open, two-way communication are critical to our success
Appendix B

List of Status and Needs Assessment Data

Engauge
Gates Technology Support Index
LoTi Survey
OASD Annual Report
OASD Hardware and Software Inventories
OASD Library Media Collection Analysis
OASD Parent Survey
OASD School Report Cards
OASD Staff Survey
OASD Student Survey
OASD Tech Competencies Staff Survey
Wisconsin Knowledge and Concepts Exams
Appendix C

Planning Events

Planning, Data Collection, Data Review
Plan Writing, Review and Revision
Final Planning Document
Submitted for BOE Approval
Submitted for DPI Certification
Appendix D

Information (Library Media) and Technology Policies

The following policies are accessible at http://www.oasd.k12.wi.us/BOE/Policy.oasd

- Copyright
- Materials Selection, Materials Reconsideration
- Inter-Library Loan
- Records Retention
- Network Use
- Management, Administration, Monitoring, Privacy, Web Publishing, e-mail
- Technology Concerns for Students with Special Needs
## Appendix E

### Library Collection by School

<table>
<thead>
<tr>
<th>Library Collection (April)</th>
<th>Greenland</th>
<th>Ixonia</th>
<th>Meadow View</th>
<th>Park Lawn</th>
<th>Summit</th>
<th>OMS</th>
<th>OHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of titles</td>
<td>15,213</td>
<td>11,188</td>
<td>19,415</td>
<td>16,363</td>
<td>14,445</td>
<td>18,949</td>
<td>16,475</td>
</tr>
<tr>
<td>2. Additional titles needed*</td>
<td>211</td>
<td>12</td>
<td>77</td>
<td>90</td>
<td>361</td>
<td>595</td>
<td>11,006</td>
</tr>
<tr>
<td>3. Books per student**</td>
<td>29</td>
<td>55</td>
<td>36</td>
<td>29</td>
<td>23</td>
<td>27</td>
<td>11</td>
</tr>
</tbody>
</table>

*Based on Dewey balance  
**Count does not include unclassified category. Goal is 18 books per student.
Appendix F

Classroom Technology for Intermediate Schools

The standard classroom in our new Intermediate Schools will have the following:

- Computer
- DVD/VCR/TV-Tuner Combo Player
- Microphone
- Ceiling Mounted Speakers
- Projector Screen
- Ceiling Mounted Projector
- Audio Amplifier Switch
- Lockable Technology Cabinet
Appendix G

Network Map
Appendix H

Technology Profile

Workstations
Approximately 1,400 workstations, 90 laptops
All workstations are IBM ThinkCentre desktops, laptops are IBM ThinkPads
Windows XP is the only Operating System being run
Hardware platforms range from Pentium 4 to Core 2 Duo Processors, RAM is 1GB

Wide Area Network (WAN)
Elementary schools are connected via two T1 lines, 3 Mbps
Intermediate and high schools are connected via OptiEMan 10 Mbps Fiber
Infrastructure equipment is Cisco (IT Standard)

Site Networks (LANs)
Site LANs include a combination of 10/100/1000 Mbps Ethernet POE/non POE switches. Most
switch uplinks are fiber (GBIC, Gigastack, SFP). Cisco switch models include 2900 series for
non POE, 3524/3550/3560/3575 for POE.
All servers are HP ProLiant ML370 series, and DL350/DL365 (HP servers IT Standard).
Server operating systems include Novell Netware 6.5 SP5, Suse Linux Enterprise Server 10,
Microsoft Windows 2003 Server, VMWare ESX Server
Services being hosted by servers include File & Print, DNS/DHCP, Proxy/Filter, imaging, DR,
Virtual Servers, Email

Cabling Infrastructure
Cabling is CAT 5 in older buildings (Most elementary, High School). CAT6 being phased in.
Cabling is color coded (IT Standard), for ease of administration.

Voice
VoIP Solution by Cisco: Cisco Call Manager, Cisco Unity
Emergency 911 POTs lines are run into each site router
Other POTs lines have been left, but are not being used
VoIP Phone handsets are Cisco 7910/7912/7940/7960
VoIP rides on data network, separated via VLANs.
Technology Profile
(Continued)

Video
Most coax cabling is RG6
Blondertung Amplifiers/Modulators/Demodulators
Video distribution software AxisTV, consisting of one content server, and two channel player servers at the high school, and one elementary.
LCD TVs are being phased in, as well as projectors

Security
The District has an industry-standard firewall appliance.
McAfee Netshield and VirusScan on both servers and workstations

Major administrative applications
Student information system: Skyward hosted via Citrix off site
Attendance-Calling System: AlertNow
Sub-Calling System: Sub-Calling Personnel
Curriculum Decision Support: Eclipse
Financial: Skyward hosted via Citrix off site
Human Resources: Skyward hosted via Citrix off site
Transportation: VersaTrans
Food Services: Taher Lunch Software
Maintenance Management: Best Access, and Trane Automation systems
Surveillance System: Vision Controls
Library System: Destiny
Email Communication: Novell GroupWise
Network Operating System: Novell
Website Titan CMS: Northwoods
Appendix I

Tech Services Customer Service Agreement

Requesting Technical Services
Oconomowoc Area School District

1. What’s the problem?
- Desktop / Laptop Computers
- Network Servers / Infrastructure
- Skyward Information Systems
- District Website
- Phones and Voicemail
- Tech-Related Training

2. Get help!
- Use the Help Desk...
  - The Help Desk (HD) system is the central point of contact for all tech questions and service requests.
  - The HD is accessible via the Novell Window under Teacher Programs or the OASD Intranet
  - Service requests are prioritized (see criteria on p. 2) and assigned to a technician within 24 hours
  - Estimated completion dates and status reports are e-mailed to the requestor

3. Help Desk Tips
- Please provide sufficient information when submitting a Help Desk Ticket (HDT). Incomplete requests will delay processing by several days. **DO NOT USE THE HELP DESK for emergency requests** (see p. 2). Please call 262-560-2125 for priority help.
- Hardware (computers, printers, etc.)
  - Please provide...
    - equipment location / room number
    - the computer name/station number [the HD provides a link for you "view computer’s info.”]
    - the computer model & serial number [front or side of the computer]
- Software
  - Please provide all information for Hardware requests plus
    - software name (e.g., MS Word, etc.)
    - detailed description of the problem including any error messages
- Other
  - if you are entering a HDT for someone else, include their full name, phone number, and location of the equipment
  - enter one request per HDT
Tech Services Customer Service Agreement
(Continued)