



Public Access Computing Technology Competencies

April 2007

webjunction.org

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Abstract

Technology has permeated 21st century libraries, impacting the environment for both patrons and staff. For library workers, a host of new skills and knowledge are now required as an integral part of working in a library. This is particularly true for staff who manage and support public access computing.

*Defining competencies for sustaining public access computing technology is the first step toward providing a roadmap for library staff to follow, in order to identify skills gaps through assessments and to connect to learning opportunities to achieve each competency. The technology competencies are divided into two sections: Patron Assistance and System Administration. **The Patron Assistance** section addresses skills that front-line library staff needed in order to provide direct assistance to patrons on the public computers. **The System Administration** section addresses skills necessary for setting up, configuring and maintaining the public computers and networks. For each high-level competency, there is a list of associated skills or knowledge by which a staff person might demonstrate that competency.*

Acknowledgments

The public access computing technology competencies were compiled from input from a spectrum of library practitioners and leaders and from competencies defined by other library organizations.

MPAC Technology Competencies Expert Group

Stephanie Gerding, Continuing Education Coordinator, Arizona State Library, Archives and Public Records

Kara Hannigan, formerly with the Bill & Melinda Gates Foundation U.S. Library Program

Janie Hermann, Technology Training Librarian, Princeton Public Library

Sarah Houghton-Jan, Information & Web Services Manager, San Mateo County Library

Marianne Lenox, Staff Training & Development Coordinator, Huntsville—Madison County Public Library

Raye Oldham, Web Projects Librarian, State Library of North Carolina

Cassandra Osterloh, Continuing Education Coordinator, New Mexico State Library

Rebecca Patton, Librarian, Chair of the Certification Oversight Committee,
Minnesota Voluntary Certification Program

PLA 2006 Competencies Focus Group

Sherry Bright, Director, Buchanan County Public Library

Cheryl Bryan, Assistant Administrator for Consulting and Continuing Education,
Southeastern Massachusetts Library System (SEMLS)

Judith Cremer, Assistant Director, Pottawatomie Wabaunsee Regional Library

Geneva Durkee, Director, Navajo County Library District

Phil Heikkinen, Director, Orcas Island Public Library

Donna Howell, Mountain Regional Library System

Michele Leininger, Continuing Education Consultant, State Library of Iowa

Christine Middlemass, Public Service Manager, Vancouver Public Library

Standards Created for the Library Field by Other Organizations

Standards Created for the Library Field by Other Organizations

http://www.cla-net.org/included/docs/tech_core_competencies.pdf

Kansas State Library Technology Core Competencies

(draft) http://kansaslibtech.blogspot.com/2005_07_01_kansaslibtech_archive.html

Ohio Public Library Core Competencies

<http://www.olc.org/pdf/core.pdf>

Public Library of Charlotte & Mecklenburg County (PLCMC) Core Competencies

<http://www.plcmc.org/public/learning/plcmccorecomp.pdf>

State Library of North Carolina Competencies in Technology

<http://statelibrary.dcr.state.nc.us/ce/competencies.pdf>

Western Council Library Practitioner Core Competencies

<http://www.westernco.org/continuum/final.html>

Technology Competencies for Patron Assistance on Public Access Computers



Assisting patrons on the public access computer stations requires that library staff be competent and confident in their own use and understanding of the technologies involved. The focus here is on the skills necessary for patron assistance by front-line staff: there may be overlap with and/or omission from a more general list of technology competencies for all library staff positions.

Competencies for configuring, administering and maintaining the computers and networks are listed under Technology Competencies for System Administration of Public Access Computers.

Hardware

Understand the functions of the hardware components of the public access computers

Why? It is important to understand the set-up and basic functioning of the computers and their associated parts in order to provide timely assistance to patrons. Many elementary tasks and troubleshooting can be done before it's necessary to call in more robust technical support.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the basic hardware and common peripheral components of a computer ▪ Understand the connections for all components 	<ul style="list-style-type: none"> ▪ Identify and use the monitor, mouse and keyboard or trackball. ▪ Identify and use the floppy drive, CD and/or DVD drive, Zip drive and USB or Firewire ports. ▪ Use the speakers, headphones and microphone. ▪ Identify a printer and a scanner. ▪ Know which port or socket to use for each component and how to verify that cables are properly connected. ▪ Identify an uninterruptible power supply (UPS) and understand its use. ▪ Identify the network connection (wired or wireless) and determine if it is properly connected. ▪ Provide basic assistance to patrons attempting to use the wireless network (if applicable).

<ul style="list-style-type: none"> ▪ Understand the start-up and power-down procedures for the public computers ▪ Understand how to reboot 	<ul style="list-style-type: none"> ▪ Properly start up and log in to a computer that is currently powered down. ▪ Know how to determine if a computer and associated peripherals are plugged in and powered on. ▪ Follow the standard procedure for powering down a computer. ▪ Know the difference between a hard (cold) reboot versus a soft (warm) reboot. Know when it is appropriate and how to perform each.
<ul style="list-style-type: none"> ▪ Understand the options for removable storage devices available to patrons 	<ul style="list-style-type: none"> ▪ Recognize different types of removable storage devices (USB flash drive, CD-R or CD-RW disk, DVD-R or DVD-RW disk, floppy diskette, Zip disk, USB external disk drive). ▪ Know the storage capacity and the limitations of each. ▪ Know which devices are supported by the public access computers. ▪ Identify which drives are mapped to external storage devices and be able to assist a patron in making use of each device.
<ul style="list-style-type: none"> ▪ Know how to obtain further technical support 	<ul style="list-style-type: none"> ▪ Know whom to contact to further troubleshoot problems with library computers (i.e., city, county or parish IT department or hardware vendor's customer support help desk). ▪ Know where to find contact information. ▪ Be able to describe the problem and report steps already taken to address it.

Operating System & File Management

Understand how the operating system manages the software applications and files

Why? Understanding the basic functions of the operating system and knowing how the set-up determines the allowances and limitations of actions performed by patrons are crucial to providing a positive experience for public computer users. Not only will these skills help with patron orientation to the public computers, but they also comprise a basic knowledge set for all computer use.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the desktop and its icons ▪ Understand the Windows Start menu 	<ul style="list-style-type: none"> ▪ Launch a program from the Start menu or the desktop. ▪ Create shortcuts for a file, folder or program on the desktop. ▪ Organize the files saved to the desktop. ▪ Empty the Recycle Bin and understand the reason for doing this. Be able to recover files and folders from the Recycle Bin. ▪ Use operating system functions to adjust speaker volume or mute speaker sound. ▪ Know the patron log-on procedure and time limits for public use.

<ul style="list-style-type: none"> ▪ Understand how to manage files and folders ▪ Understand the use of common file management tools in Microsoft Windows 	<ul style="list-style-type: none"> ▪ Know the difference between programs, files and folders. ▪ Perform basic file and folder functions, including how to open, close, delete and rename, as well as copy, cut and paste (or drag and drop) files and folders. ▪ Find folders and files in My Computer or Windows Explorer. ▪ Be aware of the different views of files and folders in My Computer or Windows Explorer. ▪ Recognize common file name extensions and their associated applications or application types. ▪ Know the patron's options for saving files both temporarily and permanently. ▪ Be familiar with the restrictions of the public access computing security and know which files get deleted at the end of a patron session.
<ul style="list-style-type: none"> ▪ Understand profiles (if applicable) and user management 	<ul style="list-style-type: none"> ▪ Be knowledgeable about profiles set up on the public computers for access by different patron groups. ▪ Be able to switch between profiles. ▪ Know how to use the public access computing station time and reservation management programs.

Security

Understand basic security practices for public access computing

Why? Using basic security procedures and instructing patrons in best security practices are important in order to help protect public computers from viruses and to protect patrons from scams.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Demonstrate an understanding of security-conscious computer use 	<ul style="list-style-type: none"> ▪ Be able to explain the difference between a user name and a password. ▪ Know how to create a secure password. ▪ Recognize suspicious e-mail attachments and instant messages, and advise a patron on how to handle them. ▪ Recognize "phishing" scams that request personal information and advise a patron on how to handle them. ▪ Explain why use of an e-mail client (Outlook, Outlook Express, etc.) is a security risk on public computers and why Web-based e-mail is recommended in the public access computing environment.

<ul style="list-style-type: none"> Understand the effects of public access computing security on user privacy 	<ul style="list-style-type: none"> Know how the public access security set-up retains records in the form of cookies, Internet history or saved files between user sessions. Know how to remove saved records upon patron request and if it's even possible. Inform patrons of their options for saving files created in a user session.
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Software Applications

Understand common software programs

Why? Being able to assist patrons with a variety of popular software applications broadens the patron experience and often meets the needs of most public computer users. These skills also translate to personal computer use.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> Understand the difference between operating system software and application software Understand functions common to most applications 	<ul style="list-style-type: none"> Identify some broad categories of different types of software applications (word processors, Web browsers, spreadsheets, databases, e-mail programs, etc.) and determine which are best suited to the patron's needs. Be familiar with the various software applications that are available for patron use on the library's public computers and know the common uses of each. Maximize, minimize, reposition and close program windows. Use horizontal and vertical scrollbars. Identify and use the menu bar and menus to access commonly used application functions. Be aware of the ability to have multiple applications open at one time. Be able to toggle between open applications (Windows Task Bar or alt+tab for PCs). Identify a toolbar within an application and understand the function of common icons on the toolbar. Cut, copy and paste information within or between open programs. Know how to use the Windows clipboard in association with these operations. Know the difference between the "save" and "save as" functions within Windows programs. List some of the most common keyboard shortcuts used with Windows programs that would be most useful for accessibility (cut, copy, paste, find, print, etc.).
<ul style="list-style-type: none"> Understand basic procedures to address application software problems 	<ul style="list-style-type: none"> Be able to force the shutdown of applications. Use the Windows Task Manager to end processes. Use the Help menu within an open application.

<ul style="list-style-type: none"> ▪ Assist patrons in the use of software applications 	<ul style="list-style-type: none"> ▪ Know what applications tutorials are available for patrons' self-paced learning. ▪ Assist patrons with Microsoft Word or other word-processing applications, including how to compose a letter or a résumé and how to insert images. ▪ Assist patrons with Microsoft Excel. ▪ Assist patrons with Microsoft PowerPoint. ▪ Assist patrons in using the Help menu in an application. ▪ Know how to copy files to a removable storage device (USB flash drive, CD-R or CD-RW disk, DVD-R or DVD-RW disk, floppy diskette, Zip disk). ▪ Know how to burn a music CD. ▪ Provide on-the-spot coaching to patrons on basic software applications skills (see Patron Training section).
<ul style="list-style-type: none"> ▪ Identify resources available to patrons for instruction and training on software applications ▪ Refresh little-used applications skills 	<ul style="list-style-type: none"> ▪ Know what books or other application-training materials are in the library's collection. ▪ Know where to find quick guides or tutorials, either online or print. ▪ Be familiar with the library's computer class offerings and schedule. ▪ Know where to find resources for learning new applications skills. ▪ Establish a technique for brushing up on a skill that has not been used for a period of time.

Internet

Understand Internet and e-mail applications

Why? Internet and e-mail are very popular uses of public access computers, so it is a high priority for library staff to have a solid set of skills in working with these technologies.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the Internet and the World Wide Web ▪ Understand how to work with uniform resource locators (URLs) 	<ul style="list-style-type: none"> ▪ Be familiar with the history and development of the Internet and the World Wide Web. ▪ Explain the basic structure of Web sites and Web pages. ▪ Know what browsers are available on the public computers and how to use them to access the Internet. ▪ Identify the different parts of a URL. ▪ Input a URL into a Web browser to visit a site for which you have the address. ▪ Know how to copy and paste a URL from an electronic document into a Web browser's address bar, or vice versa. ▪ Be able to print only the desired information from a Web site. ▪ Identify a hypertext link (URL) embedded within a Web page and, where possible, be able to identify the home Web site within the hyperlink text before clicking and following the link.

	<ul style="list-style-type: none"> ▪ Open a hypertext link in a new window or a new tab (Firefox/Mozilla/Internet Explorer 7).
<ul style="list-style-type: none"> ▪ Understand common security protocols related to Internet use 	<ul style="list-style-type: none"> ▪ Know the purpose of antivirus and antispam software programs. ▪ Know what pop-up and pop-under windows are. ▪ Use pop-up blockers on the public access computers and know how they prevent both harmful and desirable pop-ups and downloads from happening. ▪ Be able to bypass pop-up blockers when necessary. ▪ Know what cookies are within the context of the Web and how cookies can get onto a computer via the use of a Web browser. ▪ List some types of activities that are best performed only on secure sites. ▪ Determine whether a particular Web page or site is secure.
<ul style="list-style-type: none"> ▪ Understand basic navigation functions of a Web browser ▪ Understand browser plug-ins and downloadable files 	<ul style="list-style-type: none"> ▪ Use Back, Forward, Stop, Refresh and Home, as well as History (if available). Be able to scroll through a page. ▪ Change the text size on a Web page. ▪ Download and save files from the Internet, including image, audio and video. ▪ Assist a patron in saving “bookmarks” or “favorites.” ▪ Download e-books and audiobooks. ▪ Know how to use online forms. ▪ Identify some plug-in applications that are commonly used with Web browsers. ▪ Update the most common browser plug-ins, such as Flash.
<ul style="list-style-type: none"> ▪ Understand Web-based e-mail programs 	<ul style="list-style-type: none"> ▪ Identify some of the most popular Web-based e-mail programs that might be used by library patrons (MSN Hotmail, Yahoo! Mail, Google Gmail, America Online/AOL, MyWay and others). ▪ Help a patron sign up for and start using a Web-based e-mail account with one of the programs available. ▪ Help patrons attach, send and save file attachments in Web-based e-mail. ▪ Help patrons manage contacts and the address book in an e-mail program. ▪ Help patrons identify spam and phishing e-mail messages and how to deal with them.
<ul style="list-style-type: none"> ▪ Assist library patrons in locating Internet resources ▪ Understand Web search engines and how to conduct a basic search 	<ul style="list-style-type: none"> ▪ Explain the differences between Web search engines, Web subject directories and library subscription databases. ▪ Be aware of the difference between the World Wide Web (WWW) and the Internet itself. Be aware of the concept of the “deep Web” or “invisible Web” and what information will not be retrieved through

for information	<p>popular search engines.</p> <ul style="list-style-type: none"> ▪ Navigate to popular Web directories. ▪ List and use some popular search engines. ▪ Conduct an image search on the Internet. ▪ Be familiar with online photo editing tools. ▪ Use a Web browser's find function to search for text strings within a Web page. ▪ Be familiar with a variety of strategies for searching the Internet, including keyword or phrase searching, the use of Boolean operators and advanced search functionality.
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Patron Training

Teach basic computer literacy skills

Why? Helping patrons to become “information-smart” is a key role for the modern library. Whether this involves teaching basic technical skills on the computer or more broadly applicable information problem-solving skills, most libraries expect front-line staff and even IT personnel to teach and guide the public. In addition to formal classes, teachable moments occur spontaneously when working with patrons. Developing solid teaching and coaching skills will provide a positive experience for patrons.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the trainer role ▪ Understand training techniques 	<ul style="list-style-type: none"> ▪ Be familiar with the library's objectives for training patrons. ▪ Seek out train-the-trainer opportunities. ▪ Be broadly familiar with adult learning theory and learning styles. ▪ Recognize the different audiences for training. ▪ Acquire strategies for engaging learners. ▪ Learn by observing or assisting peer trainers.
<ul style="list-style-type: none"> ▪ Understand the coaching role 	<ul style="list-style-type: none"> ▪ Know the difference between formal and informal learning. ▪ Recognize opportunities to share knowledge and provide “just in time” learning to patrons at the point of need. ▪ Know the library's class schedule and know when to refer a patron to formal learning. ▪ Direct a patron to further resources for learning.
<ul style="list-style-type: none"> ▪ Develop information problem-solving skills in patrons 	<ul style="list-style-type: none"> ▪ Assist library patrons with searching the library's catalog. ▪ Help patrons to develop the ability to recognize an information need, meet it and evaluate the results. ▪ Teach critical thinking skills for the evaluation of information. ▪ Be familiar with strategies to evaluate the accuracy, authority, currency and credibility of Internet resources.

Printing

Print from applications and troubleshoot basic printing problems

Why? The ability to print all kinds of documents is a frequent expectation of patrons on the public access computers. Front-line staff need to be able to assist the process and do some simple troubleshooting before calling for technical support.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the basic functions of the printer ▪ Perform basic maintenance tasks 	<ul style="list-style-type: none"> ▪ Determine if the printer is powered on. ▪ Know where to find printer paper and how to load paper into the printer. ▪ Clear paper jams. ▪ Identify and select (change) the active printer. ▪ Change printing preferences such as color, b&w or two-sided printing if available. ▪ Know how to add a printer. ▪ Access the printer queue for a specific printer, and know how to manipulate print jobs in that queue: pause, resume and cancel print jobs. ▪ Know the difference between a laserjet and an inkjet printer.
<ul style="list-style-type: none"> ▪ Understand how to print from common applications and devices 	<ul style="list-style-type: none"> ▪ Use page set-up and print preview. ▪ Print and save Web pages and/or portions of the content on a Web page, including images. ▪ Help a patron to print digital images from a camera, CD/DVD or USB flash drive.

Policy

Understand the library's policy for patron use of public computers

Why? A clearly defined policy for patron use protects both users and the security of the computers themselves. It helps front-line staff by allowing for greater consistency in enforcement of rules and regulations.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the library's policies for patron use of public computers ▪ Understand logging of user data and how that data is used 	<ul style="list-style-type: none"> ▪ Know what data is logged by the library, including patron usage sessions, library Web site visits and other sources (such as the integrated library system). ▪ Be broadly familiar with the basics of copyright restrictions and violations and know how to determine whether or not a given Web page/site is copyrighted, as well as the specific copyright terms. Be able to apply this knowledge to patron printing of Web pages and documents found on the Web. ▪ Identify any written library policies dealing with computer and network security, including a computer security policy, an Internet usage

	<p>policy, a public access computer usage policy, and a CIPA and filtering policy.</p> <ul style="list-style-type: none"> ▪ Be aware of the relevance to libraries of the Children's Internet Protection Act (CIPA). Know whether or not filtering software is used on public access machines in the library and how/when it may be turned off.
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Staying on Top

Keep ahead of changes in technology and embrace the learning curve

Why? Everyone knows that the only constant is change! It's a career-long challenge to stay one or two steps ahead of patrons in order to meet their ever-evolving needs.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the resources and strategies for keeping up with new technologies 	<ul style="list-style-type: none"> ▪ Be aware of the importance of lifelong learning for all levels of library work and advocate for management support of a personal learning plan. ▪ Locate information sources to stay informed of new technologies and programs becoming available or being used by patrons, including e-mail lists, journals and blogs. ▪ Know what is meant by "Web 2.0" and "Library 2.0." ▪ Learn about IM (instant messaging tools: Meebo, Trilliam, GAIM), social networking sites (MySpace, Facebook, SecondLife), social bookmarking (del.icio.us, furl), photo-sharing (Flickr, ShutterFly), music-sharing (Last.fm, Pandora, iTunes), and video-sharing (YouTube). ▪ Locate and read blogs and podcasts. Know what is meant by an RSS feed and how to subscribe. ▪ Be familiar with online collaboration tools, like GoogleDocs, wikis or LibraryThing. ▪ Know how to locate and use tutorials, webcasts and other online opportunities for learning. ▪ Develop communication channels with system administrators to learn about changes and upgrades to the public access computers. ▪ Develop a plan to allow for testing and experimenting with new technologies becoming available or being used by patrons.

Technology Competencies for System Administration of Public Access Computers



The system administrator (whether formally trained or “accidental”) is responsible for configuring, administering and maintaining the public access computers for reliable and secure use by patrons. The public use of the systems introduces special requirements for networking, security and time management. These competencies assume and build upon knowledge of the Patron Assistance skills for hardware, operating systems and security.

Hardware

Set up and maintain the hardware components of the public access computers

Why? Setting up the physical parts of the computers is the foundation of presenting a working system for patrons.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the basic set-up of computer hardware ▪ Understand how to identify and connect peripheral devices 	<ul style="list-style-type: none"> ▪ Identify the basic computer hardware (server and desktop or workstation). ▪ Identify internal hardware components (central processing unit [CPU], motherboard, network interface card [NIC], video [graphics] card, audio [sound] card). ▪ Identify common peripheral components (mouse, keyboard, monitor, speakers, headphones, microphone, printer, scanner) and external storage drives (hard disk drives, floppy drive, CD and/or DVD drive, USB flash drives). ▪ Be familiar with the basic set-up of a computer and the purpose of each cable connected to a computer, and know how to verify that cables are properly seated in the right ports on the computer. ▪ Identify and connect key PC hardware drives and ports (floppy drive, CD and/or DVD drive, USB ports, Firewire ports, parallel ports, serial ports, video port, mouse port, keyboard port, speaker [sound] port, microphone port). ▪ Properly install and use a surge protector, UPS or other intermediary electrical device.
<ul style="list-style-type: none"> ▪ Understand hardware performance 	<ul style="list-style-type: none"> ▪ Know the differences between computer memory (RAM) and disk drive (disk storage). ▪ Explain the impact of individual components on performance (speed of the CPU), amount of memory, amount of disk space, capacity of the computer bus, performance of the graphics card and the capacity of other individual hardware components. ▪ Monitor component performance to troubleshoot issues with a computer.

	<ul style="list-style-type: none"> ▪ Troubleshoot problems with components and narrow the source of a problem to a peripheral device or to the computer itself.
<ul style="list-style-type: none"> ▪ Understand the hardware upgrade process 	<ul style="list-style-type: none"> ▪ Be knowledgeable about the relationship between hardware components and the capacity for operating system and software upgrades. ▪ Research new computer equipment and systems and make recommendations for purchase. ▪ Be familiar with the various internal and external options for upgrading hardware (a wireless NIC could be PCI versus USB). ▪ Install new hardware including the proper/current drivers.

Operating System & User Management

Maintain the operating systems for maximum performance and manage user access

Why? It is crucial to understand the functions, features and limitations of the operating system(s) on the public access computers as this knowledge determines many of the other processes and activities performed. This is also the level at which user access permissions are granted or constrained and thus integrates with security practices.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the core functions performed by operating system software ▪ Understand how to power up, control processes and shut down the computers 	<ul style="list-style-type: none"> ▪ Locate hardcopy or electronic user manuals and other documentation related to the computer itself and the operating system used on that computer. Know how to locate and use online help. ▪ Identify some widely used operating systems (Microsoft Windows [versions: 95, 98, ME, 2000, XP, Vista], Unix, Linux, Apple Mac OS, Palm OS, Microsoft DOS). ▪ Identify the version of the operating system running on each computer. Be aware of the features and limitations of the current version(s). ▪ Determine the processing speed, the amount of RAM, and both free and total hard drive space on a Windows computer. ▪ Be able to end processes. ▪ Know the correct sequence of events to properly shut down the public access computers. Know how to force a shutdown of a “frozen” computer. ▪ Add/remove operating system components. ▪ Uninstall/update hardware drivers.
<ul style="list-style-type: none"> ▪ Understand the regular maintenance tasks necessary for the library’s public computers ▪ Understand the reasons for performing these tasks and the relationship to good security practices 	<ul style="list-style-type: none"> ▪ Create a plan that specifies the frequency and sequence of the maintenance tasks and identifies which tasks are automated. ▪ Perform basic Windows computer maintenance tasks (defragment a drive, clean up a drive, run CHKDSK on a drive). Know the differences between each task and how frequently to perform them. ▪ Verify that automatic settings for antivirus, operating system and other application software updates are correctly configured and functioning. ▪ Back up files and recover backed-up files.

	<ul style="list-style-type: none"> ▪ Change the screen resolution in Windows. ▪ Access operating system logs and notifications (“Event Viewer” in Windows).
<ul style="list-style-type: none"> ▪ Understand user management ▪ Understand access and time management options for public computers 	<ul style="list-style-type: none"> ▪ Know the options for granting and limiting patron access to the public computers. ▪ Create/modify/delete users and groups. ▪ Change passwords for all accounts. ▪ Configure user environments and security for different user groups. ▪ Know the options for reservation and time management systems for the public computers.

Networking

Set up and maintain the public access computing network

Why? Setting up the network, both physically and electronically, is the backbone of public access computer systems, allowing patron access to the Internet. It overlaps with security issues.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the key components and setup of a local area network (LAN) ▪ Understand the relationship between a LAN and a WAN (wide area network) ▪ Understand strategies for troubleshooting network problems 	<ul style="list-style-type: none"> ▪ Know what is meant by a LAN and how it can be connected to the Internet. ▪ Know what is meant by a network server, file server, application server and print server. ▪ Produce or find a network diagram of the LAN and demonstrate a full understanding of how network devices connect together. ▪ Visually identify a network hub or switch, wireless access point, router and modem (dial-up, DSL or cable). ▪ Visually identify a network cable (Cat 5, Ethernet, 10BASE-T, unshielded twisted pair, etc). ▪ Set up a switch (or hub) and use it to connect several network devices (computers, printers, etc.) together, and use it to connect those computers to a larger network. ▪ Determine the connection status of a computer and test connections on the LAN or WAN. ▪ Use basic network troubleshooting tools such as ipconfig, ping, tracert and nslookup. ▪ Know the purpose of a NIC (network interface card) on a computer, identify it by looking at the back of a computer, and know what type of cable is required to connect it to a network wall jack, hub or switch. ▪ Test connections to remote computers on the Internet. ▪ Recognize the difference between a local hard disk drive and a network drive. ▪ Isolate and identify problems with the network. ▪ Use Remote Access to troubleshoot network problems. ▪ Know whom to contact to further troubleshoot network connectivity

	issues (i.e., city, county or parish IT department, or the library's Internet service provider [ISP]).
<ul style="list-style-type: none"> ▪ Understand network protocols and addresses 	<ul style="list-style-type: none"> ▪ Know what is meant by TCP/IP (Transmission Control Protocol/Internet Protocol). ▪ Know what is meant by IP addresses, Default Gateway and DNS Server addresses. ▪ Know how a static IP address differs from an address assigned via DHCP (dynamic host configuration protocol). ▪ Know the difference between public (routable) and private (non-routable) IP addresses and the use of NAT (Network Address Translation). ▪ Identify the network address that has been assigned to a particular computer. ▪ Explain the different types of Internet connections (DSL, T-1, etc.) and speeds typically available to a public library.
<ul style="list-style-type: none"> ▪ Understand the operations of a client/server network (if applicable) ▪ Understand the operations of a peer-to-peer network 	<ul style="list-style-type: none"> ▪ Identify the differences and the pros/cons of both a client/server network and a peer-to-peer network. Know which your library uses. ▪ Know the difference between a network client and a network server. ▪ Know the role of a Domain Controller in a Windows Active Directory network—a client/server network. ▪ Know the difference between logging on to the computer itself and logging on to a network domain, and know how to select between these choices. ▪ Know what a network user account is and how to connect to a network with such an account. ▪ Know how to change the password for your network user account. ▪ Know how a thin client computer differs from a PC.
<ul style="list-style-type: none"> ▪ Understand wireless networks 	<ul style="list-style-type: none"> ▪ Know the key differences between wired and wireless networks. ▪ Identify the essential pieces of equipment needed to establish a wireless hotspot in the library. ▪ Identify special equipment that an individual computer needs to have in order to connect to a wireless network. ▪ Identify both physical and radio frequency factors in a library building that can interfere with the radio signals used with wireless networking. ▪ Mitigate the risks in configuring a “staff-only” wireless network. ▪ Mitigate the risks in offering wireless Internet access to the public. ▪ Identify the best security protocols and schemes that are used with wireless networks.

Security

Establish basic security set-up and maintenance for public access computing

Why? Threats to security of the network and to the physical equipment are ever-present, so knowledge and vigilance are important characteristics of the successful administrator.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the nature of security threats to a public access system ▪ Understand hardware- and software-based security solutions 	<ul style="list-style-type: none"> ▪ Know what is meant by various malware, such as viruses, spyware, adware, trojans, worms and keyloggers. Know the threats each poses. ▪ Recognize the symptoms and warning signs of several common types of computer security threats: banner ads, pop-ups, spyware, e-mail solicitations of personal information (“phishing”), significant slowdown in overall computer performance, files or folders that are deleted without user intervention, new installed programs that were not installed by a legitimate user, etc. ▪ Know what a firewall is and why it is important to secure computer networks with firewalls. ▪ Be able to suggest other hardware-based security solutions: proxy servers, routers, workstation “lockdown” mechanisms (Centurion Guard). ▪ Be familiar with password security and password record-keeping. ▪ Be able to suggest some software-based security solutions: virus and spyware protection software, software firewalls, workstation lockdown programs (Fortres Grand, DeepFreeze, etc.). ▪ Know what virus definition files are.
<ul style="list-style-type: none"> ▪ Understand the security set-up on the library’s public access computers 	<ul style="list-style-type: none"> ▪ Determine what protective software is installed on the public computers and whether the patches and updates are current. ▪ Know what to do when installed antivirus software indicates a virus has been found on a public computer, whether in a file, an e-mail attachment or an executable program. ▪ Be aware of the impact of the public access computing security on various malware, such as viruses, spyware, adware, trojans, worms, etc. ▪ Know how the public access computing security impacts the ability to install or upgrade operating system or other software. ▪ Determine how the public access computing security system restricts patrons’ actions. Know what actions are allowed but deleted later. ▪ Identify some software-based security solutions: virus and spyware protection software, software firewalls, workstation lockdown programs (Fortres Grand, etc). ▪ Know how to set up filters and Child Internet Protection settings.
<ul style="list-style-type: none"> ▪ Understand regular and automated security maintenance tasks 	<ul style="list-style-type: none"> ▪ Schedule a regular, automatic virus scan and know how to determine whether or not the public access system allows this or makes it unnecessary. ▪ Configure a public access computer to automatically check for and

	<p>download operating system patches and updates over the Internet.</p> <ul style="list-style-type: none"> ▪ Configure a computer to automatically check for and download software application patches and updates over the Internet (if applicable). ▪ Inspect the public computers for rogue hardware, such as keyloggers.
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Software Applications

Install and upgrade common software programs

Why? Proper set-up, licensing and upgrading of common software applications will make life easier for the front-line staff assisting patrons in the use of programs popular with the public.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand how to set up and manage software applications for public access computing ▪ Understand software licensing 	<ul style="list-style-type: none"> ▪ Determine what version of a software application is running on a public computer and whether it is the latest version. ▪ Identify common types of software licenses and verify whether a specific installed application on a public computer is properly licensed. ▪ Know what an end-user license agreement (EULA) is. ▪ Maintain and/or upgrade software. (Relates to security set-up). ▪ Isolate and identify problems with the software applications. ▪ Install or uninstall (remove) a software application. ▪ Select, unselect and reset default toolbars and icons within a specific program.

Printers

Set-up and maintain public access computing printers

Why? Patrons want to be able to print from a variety of applications. Proper initial set-up and regular maintenance will help the front-line staff deal with patron requests.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the set-up of printers for the public computers 	<ul style="list-style-type: none"> ▪ Properly attach power, networking, USB, parallel and/or serial cables to a printer. ▪ Use Microsoft Windows printer configuration tools to add a printer, print a test page, perform “Printer Queue Management,” pause or delete print jobs and troubleshoot printing problems. ▪ Identify whether a printer is locally attached or networked. Identify the differences and the advantages of each. ▪ Share a printer on the network, either directly if “network-ready” or shared from a specific computer on the network. ▪ Use basic printer controls: turn power on and off, switch status from offline to online, cancel current print job, etc. ▪ Be knowledgeable about the options for print management software and be able to implement such a system.

<ul style="list-style-type: none"> ▪ Understand basic troubleshooting and maintenance of printers 	<ul style="list-style-type: none"> ▪ Know where to find toner and/or ink cartridges and how to load them into a printer. ▪ Know where to order or request printer supplies (paper, toner cartridges). ▪ Distinguish whether a printing problem is a result of issues with the printer itself, with specific computers, or with software applications that are trying to print to it. ▪ Know how to properly clear a paper jam.
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Staying on Top

Keep ahead of changes in technology and embrace the learning curve

Why? The constant pace of change impacts system administrators in a big way. Not only is it desirable to keep up with staff and patron demands for new technologies, it's a necessary and never-ending challenge to keep up with threats to security.

Competencies	Demonstrable Skills/Knowledge
<ul style="list-style-type: none"> ▪ Understand the resources and strategies for keeping up with technology 	<ul style="list-style-type: none"> ▪ Devise a strategy for staying informed about advances in technology and tools that are likely to impact libraries. ▪ Be aware of the importance of lifelong learning for all levels of library work and advocate for management support of a personal learning plan. ▪ Locate tutorials, webcasts and other online opportunities for learning. ▪ Locate and subscribe to e-mail lists, journals and blogs relevant to library technology. ▪ Experiment with and test new technologies. ▪ Determine the implication of new technologies on public access hardware, software and security.



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6565 Kilgour Place

Dublin, OH 43017-3395

www.oclc.org

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PRM12493 076039—.05M, OCLC