Can Open Source Software Save School Libraries Time and Money?

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Open source software offers free, flexible, and reliable solutions to many common technology needs of school libraries faced with shrinking budgets. While open source is not magic pixie dust, current users have seen extraordinary opportunities for savings. Based on their experience, school librarians should consider open source solutions for some purposes.

What Do Libraries Need?
Library patrons need technology for information access, communication, and productivity. A computerized library system manages collections and circulation, while simple workstations, or kiosks, access the information system. Workstations for electronic references and the Internet can include general productivity software (such as word processing, spreadsheet) to facilitate research. Over time, these technologies should be configured to scale up to accommodate more patrons at more workstations, and the software should be reliable with minimal management.

In most schools, these needs are met by proprietary software, such as Microsoft Windows, Apple OS X, Microsoft Office, and Spectrum Suite (Winnebago). Licensed for a per-seat fee, the software may not be altered or copied, and may have more features and be more user-friendly than open source software. Further, patrons are comfortable using the same interface when moving from one type of library to another.

However, even with educational discounts, proprietary software is expensive, often incurring additional costs when more patrons, workstations, features, and services are added. Formats may not translate well across platforms or have limited backwards compatibility. For example, a document saved in Microsoft Word's proprietary format can be difficult to open in another word processing program or even in an older version of Word. As a result some educators are considering open source software as a flexible, economic solution for some tasks.

What Is Open Source Software?
Source code is the engine that powers a program, but users seldom see it directly. Unlike proprietary software, source code is freely accessible to legally use, change, and redistribute without cost. Although few educators have the expertise to change open source code, all can benefit from improvements made by the large number of volunteer programmers who use the Internet to collaborate and publish their code refinements. Open source software distributed under the GNU General Public License (GPL) permits the use, modification, and distribution of the program at no cost provided that these modifications are distributed under GPL. This radical shift from the software business model used by IBM, Sun, and HP often results in a robust, well-tested software product. Listed in table 1 are open source programs that are attractive alternatives for school library use.

How Can Open Source Help Librarians?
Current users in education tout the low cost, reliability, desirable features, and security of
open source software. There are viable solutions for networked information systems, kiosk-like workstations, and general productivity needs. Since there is no charge to download and install these programs on multiple computers, anyone is free to experiment or scale up without violating a license agreement. Open source is not cost-free; additional costs incurred are in hardware purchase and time spent on configuration and support. An added benefit of open source includes the development of valuable, contributed information to the “Commons.” For example, filtering solutions can offer customized control, including community sharing of blacklists and rules among all users.

Most open source is interoperable, which means that file formats work with proprietary software. For example, OpenOffice.org can open and save files in Microsoft Word, Excel, and PowerPoint formats. Open source network software communicates smoothly with proprietary network solutions and may even organize them. Of special importance, teachers and students can easily create and move their work among library, classroom, and home computers.

Many open source solutions begin with Linux, a popular and powerful operating system for servers. On the desktop, Linux can have the look and feel of either Microsoft Windows or Apple Macintosh with minimal differences in the performance of general tasks from the users’ perspective. Nor is it necessary to use Linux to use open source programs such as OpenOffice.org, the GIMP, Adobe Photoshop, and Apache. All are available in versions for Windows and Macintosh.

In fact, Apple OS X includes Apache.

**What are the Drawbacks?**

The key issue is expertise. Open source software may be more difficult to install and configure, troubleshoot, or upgrade. If schools can find free, accessible help on e-mail lists and Web sites and can build relationships with other users, they will be able to save money. Successful users learn to research solutions on the Web and consult with experienced users. Open source users suggest that schools begin with incremental experimentation, thoughtful migration along a clearly defined path of popular solutions, and while networking with more experienced users to troubleshoot familiar problems. Further, since many curriculum-oriented K–12 software applications (Plato Learning Systems and Accelerated Reader, Writer, Math from Renaissance Learning) only run under Windows or Mac OS, schools may favor a hybrid model of open source and proprietary solutions to realize long-term savings without sacrificing services.

**How Can Thin Clients Help?**

Most users’ needs are served by a few common programs. To meet their requirements with a minimum of resources, some schools use thin clients, or networked computers linked to a remote operating system that contains the programs and files on a terminal server. The local workstations consist of a network card, some RAM, a monitor, a keyboard, and a mouse. Users can access their personalized desktop from any local computer. Such thin clients are inexpensive and easy to replace. Since all software installations and upgrades are performed on the server, management and maintenance tasks, as well as viruses and hacking challenges,
are handled with less effort from a central location.

Although several companies offer proprietary thin client software, current users praise an open source solution: the K12 Linux Terminal Server Project (K12LTSP). The project is led by educators who have tailored the software for school needs. Schools can expect easy deployment and a welcoming community of mutual aid and free support when troubleshooting problems.

**What About Open Source Library Automation Software?**

Koha and OpenBiblio are Web-based, open source library automation packages. Koha is a library and collection-management system for cataloguing, searching, member/patron management, acquisitions, and circulation (issues, returns, and reserves) of physical items in the collection. With Koha, libraries can import records for their physical collections into a flexible, reliable database. Koha is built on several no-charge, open source programs, including Apache, a popular, powerful Web server that runs more than half of all Web sites on the Internet. Another product, OpenBiblio, contains an OPAC, circulation system, cataloging module, and library administration functionality. Both Koha and OpenBiblio have active development teams that continue to make modifications and improvements in the source code. Koha has been under development longer and is considered a more mature application.

Both Koha and OpenBiblio run on multiple platforms and provide Web access through an open source browser, such as Firefox, a feature that may cost extra in a proprietary solution. By investing the time to develop the local expertise to use an open source library automation system with Linux thin clients running Firefox, school libraries can realize significant long-term savings and simplify maintenance and management (see figure 1). Proponents suggest that the costs of open source solutions are ultimately lower than proprietary ones.

For a school district, Koha can be configured to include library branches. For example, a network administrator can run a Web-based Koha server at the high school, with middle and elementary schools branches or even the town’s library as a branch. Since the network link between a branch and the main library database can even be dial-up, there is no need to run expensive networking equipment at the actual branch location. Further, because all applications are Web-based, schools can use multiple platforms without installing or supporting client software.

**Where Can We Learn More?**

We invite you to explore the information and tools available at the Open Options Web site, <www.netc.org/openoptions>. Open Options is an independent research project of the Northwest Educational Technology Consortium at the Northwest Regional Educational Laboratory. Open Options is not associated with any open source software project or company.

With thoughtful oversight, schools will find open source less expensive, and more flexible, responsive, and reliable than proprietary solutions. An integrated solution using various open source programs and Linux thin clients—or a hybrid model to accommodate other K-12 programs—are increasingly attractive options. School librarians, working with their network administrators, should consider joining this community of developers and users who are building an intellectual commons, while meeting the needs of their patrons effectively and economically using open source solutions.