Open source software in agricultural education

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ABSTRACT

The use of Information Technology (IT) in education has become a predominant topic for discussion in the recent years. While teacher education curricula have been up-dated to include computers in education, educational institutions have adopted the new information technology for teaching-learning and administration. With the emergence of Internet and its World Wide Web (WWW), the trend towards use of information technology in education has seen tremendous growth. The reducing cost of computer hardware also has paved the way for integration of computer in educational institutions. However, because of the heavy dependence on proprietary/commercially available high cost software and their licensing, many educational institutions are not in a position to harness the potentials of information technology. This paper discusses the alternative to high price software for educational, research and extension purposes and makes a case for using open source software in education.

Key words : Information Technology, Open source software, WWW

INTRODUCTION

Programmers write software source code using programming languages. The source codes are compiled and saved in an executable file, which cannot be "read" by human who has no access to the source code. Most of the software that we purchase in the market are available in the this binary form, and are a very effective way for proprietary software producers to control their intellectual property and sell the software products under different license conditions. On the other hand, open source is "an approach to software development and intellectual property in which program code is available to all participants and can be modified by any of them" (Warger, 2002).

The open source has a long history, but it received a major boosts with the establishment of the Free Software Foundation (FSF) (http://www.gnu.org) in 1985 by Richard M. Stallman. The FSF has developed the General Public License (GPL) that is often call "copyleft" to allow programmers to release the software with its source code. In the year 1991, Linus Torvalds, a student in Helsinki University started a project that would spread to become the "poster child of open source". With the release of version 0.1 of the Linux kernel as an operating system, open source as an alternative approach to software development became popular. In the mid 1990s, Netscape decided to publicize the source code of its browser, which led to the emergence of Open Source Initiative (OSI) (http://www.opensource.org) as an alternate institution to FSF. The OSI maintains that for any software to satisfy as open source:

- The source code must be distributed with software or otherwise made available for no more than the cost of distribution;
- The software be allowed for re-distribution without any royalty payment to the creator; and
- The user can modify the source code and then distribute the modified software under the same terms.

Sometimes, the software released under open source is also called "Free and Open Software" (FOSS). To a certain degree, open source software is free of charge to the extent that they do not charge licensing fee for usage, However, it should nor be confused as "freeware" that are made available free of cost in their executable form without the source code. In case of the open source, the free is as in freedom, and can be seen as freedom to access the source code, freedom to use the software without paying any license fee, freedom to redistribute and freedom to modify the software and distribute.

Open source in agriculture education :

One of the biggest reasons for using open source software in education is the cost. As there is no licensing cost to use open source software, the initial cost of technology deployment is reduced. The money saved from this account can be utilized to procure more hardware to provide greater access.

Apart from the cost of software, the open source softwares are highly reliable for their performance. For example, the Mozilla web browser, Apache is a favorite amongst web administrators, as its down time is the

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lowest. MySQL has six times fewer defects that proprietary databases proved in the quantitative test of database software (Resoning, 2003).

Choosing right open source software :

As open source gains prominence and new programs are released, it becomes necessary to evaluate them

Table 1 : Open source software for educational institutions			
Sr. No.	Category	Software	Source
1	Office	GnomeOffice	http://live.gnome.org/GnomeOffice
		KOffice	http://www.koffice.org
		OpenOffice	http://www.openoffice.org
2	Word Processor	AbiWord	http://www.abisource.com/
		KWord	http://koffice.org/
		Lyx	http://www.lyx.org/
		Writer	http://www.openoffice.org/
3	CD Burning	Brasero	http://www.gnome.org/projects/brasero/
		Cdrtfe	http://cdrtfe.sourceforge.net/
		Infrarecorder	http://infrarecorder.sourceforge.net/
4	Graphics	Blender	http://www.blender.org/
		Breve	http://www.spiderland.org/
		BRL-CAD	http://brlcad.org/
		gSculpt	http://gsculpt.sourceforge.net/
		K-3D	http://www.k-3d.org/
		Misfit Model 3D	http://www.misfitcode.com/misfitmodel3d
5	Internet	Chromium	http://code.google.com/chromium
		Flock	http://www.flock.com/
		Mozilla Firefox	http://www.mozilla.com/
4	Web Server	Apache	http://httpd.apache.org/
		XAMPP	http://www.apachefriends.org/en/xampp.html
		Cherokee	http://www.cherokee-project.com/
5	Proxy Server	BFilter	http://bfilter.sourceforge.net/
		Squid	http://www.squid-cache.org/
6	Email Server	Sendmail	http://www.sendmail.org
7	Database Server	Berkeley DB	http://www.oracle.com/technology/products/berkeley-db/index.html
		MySQL	http://mysql.com/
		PostgreSQL	http://www.postgresql.org/
8	System Software		
		BackupPC	http://backuppc.sourceforge.net/
		Startup Manager	http://startupmanager.org/
9	Antivirus	ClamWin	http://www.clamwin.com/
		Moon Secure AV	http://www.moonsecure.com/
10	Content Management Systems		
		Joomla	www.joomla.org
		Wordpress	http://wordpress.org/
		Drupal	http://drupal.org/
11	Learning Management Systems		
		Moodle	http://moodle.org
		Sakai	http://www.sakaiproject.org/portal
		Atutor	http://www.atutor.ca
12	Library Management Systems		
		Koha	http://www.koha.org
		Eilda	http://www.emilda.org
		PhpMyLibrary	http://phpmylibrary.sourceforge.net

before they are used in any education institution. Wheeler (2003) recommends a four steps approach to evaluate open source programs.

– Identify candidates

– Read existing reviews

– Briefly compare the attributes of the leading programs *vis-a-vis* your needs

– Prepare an in-depth analysis of the top candidates

To find the suitable programs for common use, one of the best ways to consult co-workers and friends who have experience in using open source. However, use of search engines is very effective in finding open source software and their reviews. To look in to the market share of particular software is also a common way to know product's popularity. In the November 2009, the Web server Apache (www.apache.org) reported to have 47.17%, largest share of the total web server market worldwide (see news.netcraft.com). In addition to this, its functionality, cost of ownership, availability of support, maintenance requirements, performance, scalability, usability, security, flexibility and licensing issues etc. should be checked.

In order to popularize use of the open source software, it is necessary to build human resource in the use and implementation of the open source itself. Education and training are fundamental to the widespread and effective use of new technology (UNCTAD, 2003). Thus open source software should be used in education at two levels, as a learning tool for programmers to understand the internal functioning of software's and develop better software and as a tool for teaching learning activities, in general.

To start with educational institutions should use open source applications that are available for windows platform and then migrate to the Linux environment. One such highly useful and productive software is the Open Office. org, which is the equivalent of Microsoft Office. Table 1 lists commonly required functions and some of the available open source software in the Linux environment.

Conclusion :

Considering the rapid change in Information Technology and availability of suitable open source software and the expenditure incurred in the using proprietary software, it seems logical to adopt open source software's in educational institutions. It is also necessary and important in developing country like India to have some leading educational institutions to take initiatives to set up specialized units to develop expertise in open source to realize the dream – Information Technology for rural India.

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