

Sunday, September 30, 2007

Open Source for Education

Adopting Linux in our Schools: A Useless Debate A heated debate ensues whenever technology advocates attempt to convince school district folks, especially teachers, to switch to the Linux operating system. The problem is that teachers and students don't care what operating system they are using. They just need to get their work done. **Sidebar** (Note: Even in the Indiana Project, often touted as an Open Source success, Linux is never mentioned to teachers. The focus in teacher training and professional development is always on instruction and learning outcomes.) **Link** to information on Open Source in Indiana Schools **Indiana's Open Source Experiment** Here is the problem: Linux advocates see the Linux adoption issue as a technology issue, when, in fact, adopting any major program in our schools is an educational and instructional issue. If this was not an educational and instructional issue, why would anyone in our schools be engaging in the conversation? **Misperception of the Issue** People who see the problem wrong (i.e., Linux advocates) will never be able to develop or propose a workable educational solution until they see that only educational and instructional problems need to be solved.

Most of these Linux advocate folks are computer professionals, not educators, and they focus upon software specifications for their evaluation. But, it is their zeal for the demise of the Windows operating system that really tarnishes the wisdom of their "recommendations." **The Only Reason to Choose an Operating System** Applications, not operating systems are important to teachers and students. Standard industry practice steps

1. Identify the instructional goals

2. Research direct connections between goals and applications

3. Test applications to determine suitability to meeting the educational and instructional targets

4. Determine what Operating system the applications run on

5. Examine Budget

6. Determine Support Staffing Needs

7. Allocate 30% of the project Budget for Professional Development

8. Allocate 10% of the budget for instructional outcome testing

9. Obtain buy-in from all project stakeholders

10. Implement the project with teachers in advise and consent roles at every phase

And, in a school setting, applications must be compatible with everything else because technical support staff are not available to manage compatibility issues.

More than Desktops and Servers

School districts require more than separate and individual desktop computers and Web servers.

School districts need integrated networks with 100% compatible components. This is referred to as "Enterprise Computing." Few of the Linux advocates take this into account. **Sidebar** The isolated desktop computers, and even the one-use word processing labs that Linux advocates recommend fall short of a school district's needs.

And even the much touted Indiana Project, referenced above, only provides one Language Arts lab per small high school, for the sole purpose of writing research papers. Even at that, no research data shows that student writing performance outcomes clearly benefit from the use of word processing computers in a lab setting. In fact, consistent research shows that it is the teacher, not equipment or software that is the independent variable with predictive validity that motivates improvements in student learning. The difference between individual desktop computers and an integrated and large-scale network of computers is easy to understand. Just look at the school cafeteria that is feeding 700 to 1,000 (or more) students in 1 1/2 hours; and compare that operation to your kitchen at home. It is plain that different (and larger) equipment is needed, even if that equipment does the same thing as the equipment in your home. The distribution channels also must ramp up, and the cleanup must be industrial strength. In the same way, the computer network and its components must be up to the task.

Sidebar In fact, the computers that are sold to schools are a heavier grade (business desktop) than most people use at home. School district computers are tougher and built with more expensive parts. This is similar to purchasing a pick up truck for moving light loads once in a while, and purchasing one that is going to tow fully loaded, heavy boats on trailers over long distances. **Playing Nice: Interoperability in our Schools** There is one Linux solution that can handle the end-to-end needs of a school district. But, Linux advocates seldom recommend this solution because it is a commercial solution. However, only a commercial company that examines school district needs and tailors its products to those needs can really compete at the enterprise level. In addition, it takes a company with a lot of resources to build a technical support staff that is available when school districts need help. There also is a standard that ensures that software products play nice with each other. This is called the Schools Interoperability Framework (SIF). But, it is expensive to meet these standards. There is one enterprise-level Linux version that is also SIF compliant.

So, why don't Linux advocates advocate that schools move to an enterprise-level Linux operating system (and, in fact, all Linux applications) meet the Schools Interoperability Framework (SIF) requirements? **Sidebar** This would ensure that

data that was created in one application, say a library automation system, could be used without having to export the data from one application and import that data into the other application. It is easy for teachers to see this problem, re-keying data wastes time, and, every time you want to update, you have to rev up the "export and import" cycle...again and again. One Technical Tune, Limited Audience Until Open Source advocates understand that they need to view Linux adoption as an educational solution (not a technological one), and deliver enterprise-level, not desktop level integration, the Linux movement will continue to stall in our schools.

Sidebar Note: This movement is different than the Open Source Movement where teacher use lots of Windows... software that comes without license fees. When teachers think of Open Source software, if they think of it at all, they think of Windows... software that they can download and run on their home computers. Many school district computers are "locked down," and teachers and students are not allowed to install software.

This requirement is not because the school district's IT Department wants to exercise draconian control, but because school district can be fined and can be forced to pay for pirated software that district employees or students install. Besides, untested software can crash computers, and put additional strain on already-under staffed IT Departments. Working Conditions Linux advocates also need to understand the on-the-job working environment, and the at-home working requirements of teachers. They must understand that teachers do most of their planning and grading work at home. In addition, they must understand that schools use many specialized software beyond basic word processing. For example, schools require an operating system that will run software for... Textbook add-on and instructional aids

Electronic microscopes, programmable calculators and science lab probes

Library automation systems

Textbook tracking

Food service Point of Sale (POS)

Transportation planning and tracking

Reporting to state and federal agencies It is naive to think only in terms of desktop solutions for our schools.

Linux needs to have instructional and management applications that perform all the tasks that are needed by school staff and teachers. Application software must also deliver seamless integration with Microsoft's active directory so that students can benefit from... Home Directories (with home and school access)

One account access to all network services

Online portfolios, with teacher access to all student files

Safe browsing and a filtered Internet experience Or, the Linux enterprise network system must have an equivalent directory system of its own. An enterprise Linux system (Novell...;) meets these requirements, but Linux advocates seldom recommend it. If a Linux Solution for Schools Exists: Why do Linux Zealots Ignore it? It is amazing that Novell...; has done its homework, and has developed an enterprise solution that is SIF Compliant, scalable and interoperable... yet Open Source advocates continue to push Linux in all its un standardized, desktop (not enterprise-level) "distros." **Sidebar Note:** a "distro" is a distribution. This is a customization of the Linux operating system. Unfortunately, one "distro" is not fully compatible with another "distro." Actually, another commercial Linux system is in operation, this one is called Xandros...;. Although Xandros...; lacks the extensive educational customizations that Novell...; offers, it is easy to use and contains smart server components that configure and connect to each other. Customized and Distinct "Distros:" Strain on IT Staff School districts under staff their technology support departments.

Most often, school district IT Department staffing is at levels that are 1/3 to 1/2 what is reasonable (and necessary).

School district IT Departments don't have the staff that is required to manage their networks and provide the Service Level Agreements (SLAs) [guarantees of uptime and service availability] required to convince teachers that everything will be working when teachers need it to be working, i.e., every class period. Repairs need to be complete in minutes and hours, not days and weeks, before teachers gain trust in the technology.

Installation and management of incompatible (and untested) network components would stretch the capacity of beyond its already limited ability to deliver support. Making an Educational Case out of IT There are two areas where Linux advocates should know better, but don't seem to know enough about education to communicate effectively with teachers...; Every school district initiative requires an educational case justification (like a business case). It is not enough to communicate computer program specifications. In fact, these specifications only become relevant in the conversation of, "Here is the direct connection to measurable student outcomes, and this is the way that these specifications apply to the educational task."

Applications, not operating systems, should be the basis for making technology choices, and only when research validates the direct connection of these applications to improved instruction Animosity Against Microsoft...; More Open Source software is available for the Windows...; operating system than for Linux, so why are so many Linux advocates against Microsoft...;'s products? Instead, Linux advocates might be more effective in getting school district staff to consider limited Linux components by promoting Windows...; versions of Open Source software... as long as file formats of the application programs are completely (100%) compatible.

Another way that Linux advocates might be successful in introducing Linux components into a school district network would be to build and deliver education-specific applications that produce measurable student achievement (i.e., increase test scores). Summary Until the Linux advocates get into our schools, find out what makes teachers' jobs easier,

produce research-based instructional applications, and make teachers the gatekeepers of every Open Source project; Linux in our schools is doomed to failure, just like the "Technology Integration Movement."

Linux advocates should study what Novell's has done to customize Linux, and to .

Better yet, Linux advocates they should just stop debating technology and discuss education. They would get much farther advocating school district adoption of Novell's enterprise solutions instead of isolated Linux desktop solutions for one-purpose lab installations.

Discussing education, not technology would go a long way in actually promoting a viable instructional improvement process that includes Open Source applications.

Linux advocates should keep the "techie talk" to themselves. They should learn to think like teachers and learn to talk "teacher talk" if they really want to get Linux adopted in our schools. Until then, Linux advocates will continue to be perceived by teachers as "geeks who talk a some strange code."

Posted by Classroom Toolkit Newsletter in Open Source at 01:00