Open Schools

The strengths of open source in the educational setting. *By Jon "maddog" Hall*

Today I went to a university in Zacatecas, Mexico to talk about the use of free software in education. When I give these talks, I normally start off by asking the students and faculty what the university is really trying to accomplish. I ask if they think the university is there to help them get good jobs by teaching them how to use the software tools available in the marketplace today, and, of course, the normal answer is a resounding "yes."

"Wrong," I tell them. The university's job is to train the future generations of people how to think, how to sift through data and discover information, and how to be leaders, not only for tomorrow, but 50 years in the future. The university is not there to teach them how to use a product, whether that be Microsoft Office, Oracle Database, or Cisco networking.

Now, I do not mind if the students are introduced to either Microsoft Office, Oracle Database, or Cisco networking in the course of their education. However, I think it is much more useful to learn how to select and use an office package, how a database functions, or how high-performance networking actually works and is configured. After they know these things, students can study how Microsoft and OpenOffice work, how Oracle and PostgreSQL work, and how to set up networking using Cisco tools. Knowledge of how to use these tools will help the student in the short term, but the underlying knowledge will help them in the long term.

Teaching them how to learn on their own helps them for their lifetime.

Likewise, although it is fine for a student to learn Java, the student should learn a wide variety of languages, including C and at least one machine language. The study of machine language lets students understand how a computer really works, how memory is allocated, and that "garbage collection" is not just something done by people with a truck on Wednesday and Saturday mornings. Another charter area for universities is research.

When computer scientists want to do research that will mix their code with that of a closed-source, proprietary product, they cannot distribute the results of their research easily. The best they can do is write about their research and hope other people can duplicate or understand what they have done from their article, because the proprietary company will probably not allow them to publish the closed sources.

Free and Open Source Software (FOSS) makes it a lot easier for universities to further the knowledge of computer science in the world by sharing their research. Rather than just writing down the results of the research, the researcher can publish the actual working source code, allowing interested researchers or companies to use it quicker and easier, and with less chance of an incorrect implementation.

Researchers also benefit from having huge amounts of software freely available to use in their research – software they will not have to code themselves but can mix and match with their code, giving them more time to concentrate on the actual object of their investigations rather than having to code the supporting infrastructure. For example, if a researcher needs a database to help hold the data from their research, they have in FOSS a large number of databases they can use without having to ask for anyone's permission or pay any licensing fees.

Finally, I have always felt that a cooperative education program, in which students go to school part time and work part time in a related job, is the way to get a solid education. It was during my own co-op period that I discovered computer science and eventually went into that field rather than electrical engineering.

In discussing cooperative education with the professors, they pointed out that some students may use proprietary software at no license charge while at the university, but when they go to work, even as co-op students, they might have to start paying for the software they used for free at the university. Likewise, when they return to the university, if a co-op company asks a student to do some follow-up work, then depending on the software license, they might not be able to use that software legally, forcing them (or the company) to buy another license at full price; however, this issue does not exist with FOSS.

I think I had a few converts that day, among both the faculty and the students. ■■■