

Choosing Open Source solutions

Christina Smart

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Open source learning environments are becoming widely adopted by educational institutions, this article explores some of the reasons for this trend.

Open source software developments have been in the news lately, Moodle the open source virtual learning environment has been adopted by The Open Polytechnic and a consortium of six polytechnics in New Zealand [1]. LAMS (Learning Activity Management System) has also been released under an open source licence and has had 1300 downloads of the software in the 3 weeks since the launch [2]. Last week Becta released a new report which suggests that schools could save significant sums by switching to open source software.[3]

The best known examples of open source software are the Linux operating system and the Apache web server, both of which have widespread appeal. But increasingly the educational community are pooling resources to create application software, like virtual learning environments, that are tailored to their needs. The Sakai project in the US is a good example where a consortium of universities is working together to develop a learning environment[4]. All the e-tools and toolkits being developed in the JISC e-learning programme are also being developed as open source software using open standards, to be of maximum benefit to the FE and HE communities.

So why are some institutions turning to open source learning environments?

The article explores this question and is organised into three sections. The first part is an interview with Stuart Yeates from JISC Open Source Software Watch [5] who details some of the reasons why institutions are turning to open source solutions. The second part of the article is a collection of perspectives and quotes from people who have developed and adopted open source software, giving their reasons for doing so. The article concludes with a set of resources and recommended reading.

What are the benefits of open source environments?

We asked Stuart Yeates from the JISC's OSS Watch what the benefits and challenges were for institutions.

Christina Smart: There appears to be a trend in the UK FE and HE community towards using open source virtual learning environments - is this the case?

Stuart Yeates: Anecdotally there certainly appears to be growing excitement around some of the open source VLEs. What this translates into in terms of hard numbers is less certain. Ideally open source VLEs should be considered on their merits beside the proprietary systems. Indeed, in a formal procurement process the inclusion of open source VLEs may help universities and colleges stay focused on the purpose of

this software - supporting teaching and learning. The important thing is that institutions are selecting the best software solution for their needs. If that happens to also be open source software, that's great.

CS: Does OSS Watch monitor the number of institutions that are using open source learning environments?

SY: No. OSS Watch provides unbiased advice and guidance on free and open source software for UK universities and colleges. We do not have an explicit monitoring role. However, in autumn 2005 we will conduct our second national survey of open source deployment. This should give us some useful data on trends when analysed alongside our initial national survey data from 2003.

Monitoring open source software deployments at UK institutions is more difficult than it might seem. Since there is no payment of licence fees, there tends not to be a single institutional contact who can provide information about what open source software the institution currently uses. Also, traditional measures of open source versus proprietary usage such as the Netcraft metrics [6] don't work because VLEs are often restricted to internal or authorised users only.

CS: Do you have an idea about what percentage of institutions are now using OSS learning environments such as Moodle, and Bodington?

SY: One measure of the growth of Moodle and Bodington might be the fact that most JISC Regional Support Centres now run regional support groups for Moodle alongside their established groups for proprietary VLEs.

Some institutions are installing Moodle[7] or Bodington[8] alongside their current systems. Sometimes, when the licensed user limit is reached on their proprietary system, new courses are added to their open source system where, clearly, there are no such constraints.

CS: So from an institution's perspective what are the main benefits of moving to using Open Source VLEs?

SY: There are numerous benefits. Perhaps the most important is the tendency for open source software to be developed using open standards. And open standards are key to successful interoperability.

Of course the growing popularity of open source VLEs encourages proprietary VLEs to also move towards open standards. That benefits everyone.

Other benefits include:

(a) the ability to tailor the system completely to local needs

Both open and proprietary software are typically both customisable in a shallow sense-you can tailor the interface

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within the bounds given by the programmers. With open source, if an institution needs the software customised in ways not thought of by the programmers, they can have the program changed, either in-house or by a third party. Once made the changes can often be contributed back to the community, making it easier for the next institution to tailor the interface.

(b) flexibility of use

Proprietary software typically charges in steps. For example, the first 500 users might cost x thousand pounds per year, and every hundred users above that adds a further increment. It doesn't matter whether those users use the software 8 hours a day 46 weeks a year or one hour every second week during term.

Open source licences are free. There are other costs (servers, disks, bandwidth, support), but these are approximately proportional to the use, how much data is in the system, how much of the use is remote and how much hand-holding the users expect.

(c) lack of surprises

Open source licences are free and perpetual, so a licence fee increase cannot happen. There is no vendor to go bankrupt, get taken over or discontinue the system and leave institutions in the lurch. These factors considerably decrease the chances of unwelcome surprises down the track. It is, however, true that an institution which has never really used open source in the past will find their first use of it a learning experience.

(d) cooperative development

Open source removes the commercial imperative to compete, enabling genuine cooperation between developers and institutions, among developers and between projects. For example, Bodington developers are attending the upcoming MoodleMoot in Oxford to demonstrate some of the work they're doing on getting Bodington and Moodle to work together. In particular, I believe, they're using Bodington's very flexible access permissions system and making it accessible within Moodle, which uses course-based permissions.

CS: And what are the main drawbacks?

SY: The main drawback is that open source software is usually free at the point of acquisition.

While that might sound like it ought to be a benefit, it can be very confusing for institutions accustomed to paying an annual licence fee for software. It is, however, the real difference between open source and proprietary options. All other support issues are tackled in a refreshingly similar fashion. If you need third party support, that is usually available from one of the many small and medium sized enterprises that are springing up around the country. Service contracts, in-house staff, training, end-user roll-out-all of these work in much the same fashion whether you choose an open source or proprietary alternative.

CS: How much of an issue is the sustainability of open source products?

SY: Sustainability is an issue for proprietary software as much as for open source software. Of course the anxiety is that software developed by the "community" might simply vanish. But in fact there is simply no evidence for that. Indeed if you have followed

best practice in selecting your open source software[9] you should be getting something that has a robust development and support community behind it.

Open source software is not cost-free, it requires hardware to run and trained people to customise, translate, install, upgrade, patch, test and maintain it. One huge advantage here is that if a significant number of institutions deploy a system such as the Bodington VLE, and even a tiny fraction of each institution's development work is contributed back to the community, then the whole system gets better and everyone benefits.

CS: From a software developer's perspective - what's in it for them?

SY: Direct participation in an international open source software development project has tremendous advantages for a software developer. Open source development communities tend to be direct meritocracies. If you have skills that are needed and are able to participate, your contributions will be valued for what they are. Many studies suggest that peer recognition is one of the key drivers behind participation in open source development.

However, no developer should contribute to an open source project without the explicit consent of their employer. The reason for this is that software is intellectual property. In most cases the owner of the intellectual property produced by writing software is the programmer's university or college. Only the owner of the property can license it for others to use, or release it for the programmer to do with as she wishes. Best practice would have universities taking their intellectual property rights seriously, as seriously as they take the ongoing development of their staff. Participation in open source projects can be an important tool in staff retention. And it might just have good public relations value as well!

CS: How is OSS Watch promoting the use of open source solutions?

SY: OSS Watch[5] doesn't promote open source. We are not an advocacy group. There certainly are such groups and they do valuable work. What OSS Watch does is something different. We try to help universities and colleges think through their relationship with free and open source software in a sensible way that will assist them in reaching the best decisions for their individual needs.

In some situations, open source solutions will be the right choice. Choosing it for the right reasons is therefore essential.

CS: What are the first steps for institutions starting to consider open source solutions?

SY: Ideally a consideration of open source options should be written into an institution's IT Strategy. It should be part of every procurement process and deployment decision. But how institutions should start thinking about open source or compare it fairly with proprietary solutions is a huge question.

Clearly raising the level of awareness is key. That's where OSS Watch comes in. We try to facilitate that process through:

- briefing notes on deployment and development issues
- free national conferences that get peers talking together, sharing best practice

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- research on the current state of open source deployments in UK institutions.

Individuals can help the process along.

(a) Talk to your peers. They are the people with problems most similar to your own.

(b) Talk to the people you get your current IT support from, whether this is in-house or out-sourced. They may already have experience using open source that they can bring to bear.

(d) Talk to your local JISC Regional Support Centre. They will put you in touch with you local and national scene.

And most important,

(c) Try it. Play with the Moodle and Bodington demo sites, install a copy on your desktop or set up a local trial. The best experience you will have to learn from will be your own.

So adopting open source software and learning environments can offer real benefits to institutions, but there are many issues to consider. For those who want to find out more the advice from OSS Watch is to try open source software and see whether it meets the needs of your particular institution.

The next section has a mixed collection of quotations about the reasons for going open source from various people who have been involved in developing, adopting or commenting on open source developments.

Other Perspectives on Open source environments

While doing some research for this article I came across a number of statements from people about their reasons for adopting and developing open source software. I also asked developers of the ioNodes and LAMS systems for their reasons for developing open source software, to find out why they give their software away for free. I've included these perspectives here because they reflect some of the ideas and principles that motivate the open source community.

An institution that decided to adopt an open source VLE

Dr Stuart Lee Head of the Learning Technologies Group, University of Oxford:

"Oxford University is a large complex institution, which encourages interdisciplinary studies. We needed a robust, scalable, flexible system that could cope with our needs, and one that was cost-effective. Bodington has proved ideal." From the Bodington.org web site [10].

Views from developers of open source software

James Dalziel architect of LAMS on why they went open source:

"There are several types of benefits for education from LAMS going open source. First, the software itself will be freely available, so although there are still costs involved in setup, maintenance, etc, there is no license component..."

The second benefit of going open source is that we have a sense that LAMS activity sequences may become a very important part of the future of e-learning. You can already export your

sequences from LAMS and share them with colleagues, who can then use and modify them, and share them back, etc. In the near future, we imagine a community of LAMS users sharing sequences and experiences with each other through a community website, and we think this may yet be one of the most beneficial aspects of the whole LAMS effort...."

The third benefit of going open source is that we see the future of the LAMS software having two major "components". The first is the core "orchestration" engine or "platform" that makes everything happen the way it does in LAMS....But the second component is the tools that run on the LAMS platform - these are the existing activity tools like Q&A, voting, forum, etc. These tools talk to the LAMS core via a common interface which means you will be able to build and adapt tools without needing to be being experts on the core system - you just need to know how to work with the tools interface. This should make it possible for a whole new community of LAMS tool developers to evolve to help extend the system...

This would have been difficult or impossible if we hadn't made the whole system open source so you could see how everything worked, and build on our existing tools as "reference models" for new/extended tools." From an interview with FERL[11]

Selwyn Lloyd of Phosphorix a company that has created the ioNode web services:

"We have long recognised an opportunity for Phosphorix to sustain an ethical business, creating code and products which can be reused and repurposed by communities which otherwise could not afford to get started, perhaps even creating opportunities for new web communities to begin."

This ethical model inspires the ioNode team at Phosphorix and is great for morale. High morale is in turn good for productivity. Innovation and solutions are not withheld. Most developers want their work to be of value and widely used which improves job satisfaction.

Certain OSS products/services are aimed at clients who wish to save time and money, others are for those who advocate the ethical vision. With turnkey hardware solutions, consultancy work, training and maintenance, Phosphorix offer open source advocates many ways to engage.

As an OSS project matures it enjoys the benefit of more "committers" [larger open source developer community] as opposed to leeches, quality assurance and security assurance are much enhanced with a larger developer community, we see this improves business and the perception of the Phosphorix products and services.

It's a long long term investment." For more information on Phosphorix and ioNodes [12].

A view on the e-Learning Framework(ELF) and open source

Scott Wilson an architect of the e-Learning Framework:

"The reason we went open source was primarily to open up the number of potential adopters of the outputs, one of the main sustaining arguments for software being that, if its used, it will get updated - and with OSS, if needs be that can be by the people that use it rather than the original developers."

Views on what higher education should be doing about open source developments.

"I believe the leverage of open source, being fundamentally a more efficient as well as democratic way of developing software, can offer great advantages. But the academic world needs to get more involved in open source, to get more familiar with its mechanisms – how it works and how it doesn't work."

Mitchell Kapor [13]

"Administrators in higher education should be tracking how open source software may meet some of their requirements and how they can participate in shaping the development of this critical software. Starting small pilot projects and engaging with the open source community are essential first steps."

Brad Wheeler [14]

Conclusion

There are a number of reasons why some institutions are turning to open source learning environments, but scalability and flexibility are particularly important. Scalability because these open source environments allow institutions to have as many users as they like without incurring bigger license fees; and flexibility because institutions can choose to develop the open source environment to meet their particular needs. If you are interested in pursuing this approach at your institution the advice is to find out more about what open source learning environments are available and have a go at using them.

Further reading

A Special Interest Group on Open Source Software for Education in Europe

OSS Watch Scoping study 2003 This scoping study on the use of Open Source Software (OSS) in UK FE and HE was carried out in 2003 and provides a snapshot of the use of OSS in the sector.

Who contributes to Open Source software? And why do they give it away?

This briefing paper looks at six groups of people who contribute to open source software developments and discusses the reasons why they make their work freely available.

Open Source Development - An Introduction to Ownership and Licensing Issues

This briefing paper explains the relationship between IPR, copyright and licensing

References

Lots of information and advice is available on the Open Source Software Watch web site. There are also a number of papers and fact sheets listed below which are worth reading.

[1] Polytechs migrate to Moodle:

A news item that originally appeared on the STUFF web site in April 2005. www.stuff.co.nz/

[2] LAMS Innovative e-learning system to be launched as open source software this week

www.lamsinternational.com/news/index.html#4

[3] eGov monitor reports that Becta are to recommend going open source can reduce costs for schools.

www.egovmonitor.com/node/695

[4] The Sakai project, Community Source Software for Education.

www.sakaiproject.org/

[5] Open Source Watch

Is a JISC funded advisory service which provides information and advice to UK and HE and FE institutions on how to use Open Source Software. It provides a wide range of resources, including readable briefing papers on various issues. And essential resource for further exploring OSS. www.oss-watch.ac.uk/

[6] Netcraft web site

news.netcraft.com/archives/web_server_survey.html

[7] The Moodle course management system web site

www.moodle.org/

[8] The Bodington web site bodington.org/index.jsp

[9] Top Tips For Selecting Open Source Software, from the OSS Watch web site

www.oss-watch.ac.uk/resources/tips.xml

[10] A quote from Dr Stuart Lee on Bodington web site:

bodington.org/index.php

[11] An interview with Professor James Dalziel on the FERL web site

www.ferl.becta.org.uk/display.cfm?resID=7907

[12] The ionode open source middleware developed by Phosphorix

www.phosphorix.co.uk/around/ionode/

[13] How is Open Source Special?

Mitchell Kapor's article on why Open source developments are the only way forward

In this short article Mitchell Kapor discusses the benefits and risks of adopting Open source solutions and the technical and community infrastructure that is required to make a development successful. He argues that to be successful the development community needs to have clear principles and a way of embedding those principles into practice.

www.educause.edu/er/erm05/erm05210.asp

[14] The Open Source Parade.

In this article for Educause Review Brad Wheeler discusses three OS projects, uPortal, Sakai and Open Source Portfolio Initiative in which the higher education community is working collaboratively to produce application software tailored to its own needs. The rising costs of software licensing are providing an incentive for institutions to consider open source solutions. Brad states:

'Open source software projects that are developed of, by, and for higher education are providing favourable economics and are harnessing the industry's vast innovation capability.'
www.educause.edu/apps/er/erm04/erm0458.asp