The Open University UK: creating a win-win situation by sharing code and content

In 2005 The Open University (OU) UK, one of Europe's largest distance learning universities, established that it was time to deploy a new Virtual Learning Environment (VLE), for both The Open University itself as well as for their OpenLearn project aimed at providing free open educational resources (OER) to the general public. A team with different sub-tasks was formed, which investigated future learning environments and how learning material was presented and disseminated through those. Next to this, the OU also researched open learning models, as part of the OpenLearn project.

The team of researchers and technical staff, after setting out the components required to meet the OU's needs the most appropriate match was determined. The choice fell on the VLE Moodle, which is an open source product.

Today the Moodle VLE has been successfully implemented at the OU and the OU has further published a significant amount of their learning material under a Creative Commons license as courses on the Moodle VLE based OpenLearn website, which are freely available to anyone interested. The OU continues to collaborate closely with the Moodle community , as this provides a very large platform for feedback and information. All the OU's development are given back to the Moodle community, which improves the product for the OU and the rest of the community.

Quick facts	
Name	Open University VLE, OpenLearn
Sector	Education
Start date	01/10/05
End date	Early 2008
Objectives	Development of a new VLE, to release Open Educational Resources [through such a VLE]
Target group	University students, general public
Scope	Global
Budget	Roughly £5 million
Funding	Partly self financed, partly foundational funding
Achievements	Functioning VLE, with courses for University students and the general public, respectively.

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Introduction

The Open University (OU) UK is one of the largest distance learning universities in the world, teaching a total of over 200,000 learner: roughly 150,000 undergraduate students and 30,000 postgraduate students.

By 2005 the OU had a variety of online services, which helped the students in their distance learning process and the university in evaluating and communicating with them. The problems in 2005 however were that many of these online services were outdated, offered little modularity, and were not centralized, which made it increasingly difficult for students and teaching staff to find their way around the OU's online platform. It was therefore necessary for the university to address these issues, and to provide a solid and functional online platform, as the Internet gradually moved in the centre of their daily operations.

The OU thus started an extensive initiative with the aim to research new learning platforms and ways to communicate and distribute learning content. This process, that started in October 2005, eventually led to two important outcomes. From a technical perspective, the OU decided to develop a virtual learning platform (VLE) on the basis of the open source software Moodle, as this software seemed to offer the highest degree of modularity and a broad user base, which ensured continuous support for the system. With regard to the learning materials itself, the OU decided to change its policy and to release large parts of them as open educational resources (OER) through the OpenLearn project, that has been generously funded by the William and Flora Hewlett Foundation, to the public under Creative Commons license.

Organisation and background

The Open University UK is one of the largest distance learning universities in the world. Today,

Niall Sclater, Director of Learning Innovation at the Open University © 2009. Used by permission.

there are about 200,000 students enrolled in the various programs the OU offers, which are supported by around 7,000 tutors and academic staff members. The university was founded in 1970 and increased in size steadily over the years. For the most part of this history the OU has been highly dependent on paper-based communication with its students. With the rise of the Internet in the 1990s the OU adapted new ways of communication, as it has always tried to have a state of the art communication infrastructure. By 2005 there were several different programs running in the background of the online learning environment, each with a different user interface and hardly any common feel to them and the functionality also needed some improvement. The university thus formed several research teams with the task to investigate all aspects of a new learning environment. As Niall Sclater, who was the director of this process, highlights: "We had a very structured approach." The teams did not only focus on the technical aspects of this undertaking but also had an eye on societal changes

that started as a by product of the Internet. Eventually they concluded that the open source Virtual Learning Environment (VLE) Moodle would be the solution that meets most of their requirements, as it was stable, modular and due to its large user base, very sustainable in the future.

More or less simultaneously The William and Flora Hewlett Foundation wanted to fund an educational entity that would investigate open learning platforms and to provide open educational resources through it. For the Hewlett Foundation the OU was the right institution for such a project, and the OU itself was very interested in this development. Patrick McAndrew, who has been involved at the OpenLearn project since its origin explains: "Essentially, although it was a very big investment, it was seen as an experiment. An experiment in how we can offer open educational resources, and what impact it would have on the University, […] on other people who were acting as providers, and […] learners and end-users." The Hewlett Foundation thus funded the OpenLearn project for a period of two years, after which the OpenLearn platform went online, offering a very extensive catalogue of learning content. The OpenLearn project itself was not directly linked to the OU's development of the Moodle based VLE, but the teams worked together closely, as the OpenLearn platform is also running on Moodle.

The two projects can be understood as the development of two platforms: one for the University, where students and teaching staff can log in and participate in courses and discussions, and one that is open to the public, where anyone can access course material and learn independently. For both platforms "Moodle forms the heart of it", explains Sclater.

Budget and Funding

The development of the Moodle based OU internal VLE was funded by the University's internal resources, meanwhile for the OpenLearn initiative the William and Flora Hewlett Foundation provided a generous contribution to the budget that also benefited the underlying Moodle VLE customization. Together the two projects had a dedicated budget of roughly £ 5 million for the development of the two VLEs, which covered research, the development of the platform, change management and anything else that was necessary in order to have a functioning system. About £ 2 million of this budget was contributed by the Hewlett Foundation, which represented the part of the budget dedicated to the technical and media aspects of the OpenLearn project.

The total number of people that was working on both of the projects combined at times reached about thirty full time employees, which included about twelve developers and a lot of the general staff from the University. The teams had clearly dedicated tasks: for the investigation of the Moodle deployment, several sub groups were formed, which did extensive research on the needs and risks of such a deployment. The team working on OpenLearn worked separately, although both teams had frequent exchange of ideas and experiences. After the official completion of the two projects in July 2008, the number of people actively involved in the projects went down substantially, even though many people are today still involved in the project from time to time. Sclater explains that at

the moment there are only two developers working full time on the development and the maintenance of the OU's VLE. Yet, academic staff members and IT related offices are still contributing to the project if there is the need for them to assist or give input.

The choice for the open source solution Moodle for the OU's VLE was less driven by avoiding licensing fees; although the University was well aware that license cost could arise with proprietary solutions, this was not a main a factor in the decision-making process. "For us that wasn't an issue, it was finding the best possible system for our needs and working on that" which was the deciding factor, explains Sclater. The change of system however did not come for free, as other factors in such an undertaking can be much costlier than software licenses, he further ads: "The true cost of implementing any system like this and for it to be effective […] are much much higher than the technical development. It's the change management, the communications and the staff development and changing working practices, which are the expensive bits." Considering that the OU not only had to introduce about 7,000 tutors and staff members to the system, but also had to ensure a smooth transition of the considerably high number of 200,000 students.

Technical issues

Before the team decided to deploy Moodle as their VLE they conducted an extensive market study on potential solutions. Although the team did not exclude proprietary solutions, such as Blackboard, from the start, they soon found out that no other system but Moodle offered the functionality and more importantly the modularity that the OU's VLE needed to have.

However, when the decision was made to deploy Moodle the work was not over, but had just begun. "When we took on Moodle, there were a lot of things wrong with it" remembers Sclater. At this point, Moodle was just a basis, which seemed to offer the highest potential for the future. To name just a few of the points that needed improvement, Sclater recalls the quiz engine, the assessment functionality, and accessibility issues which needed a lot of work. In order to cope with this large scale undertaking appropriately, the team in charge of the VLE split into twelve sub projects, which focused on separate aspects:

- *Asynchronous Communication* (forums, wikis, blogs, polling tool, audio recording facility),
- *Synchronous Communication* (instant messaging, audioconferencing, video- conferencing, shared whiteboards, application sharing),
- *E-assessment,*
- *E-portfolio,*
- *Calendar,*
- *Tracking and Reporting,*
- *Integrated Online Experience* (integration of StudentHome and Moodle, information architecture and design),
- *Mobile Learning* (offline Moodle, viewing of VLE on small mobile devices,podcasting),
- *Learning Design* (learning design tools),
- *Federated Search* (searching across all VLE tools and other information sources at the University),
- *Maths and Scientific Notation* (the input and display of this notation),
- *Library Resources* (RSS newsfeeds of library resources to course websites).

These teams worked closely together with the faculties and the academic staff, ensuring that the functionality would actually meet the demand. In addition to the team of developers other members of staff from the University helped out in the design and the testing of the new VLE, and whenever some non-technical expertise was required.

Recently the OU has introduced one feature, of which they are particularly proud of, which changes the way users can interact with each other. Considering that most VLE's have little room for users to do things freely, the OU wanted to change this and make the system less rigid and institutional. "We have re-engineered Moodle and one thing that we have added to it is the concept of what we call a 'shared activity' so that any student or member of staff can set up a forum, a blog, or a wiki at the moment, and invite anyone else to join them in that," highlights Sclater, "And that I think is a radical change to the structure of Moodle."

Eventually, when the OU internal VLE was rolled out , the OU brought the largest number of users to the Moodle community at one single point. For the Moodle community this process was very beneficial, as deployments and improvements on such a large scale ultimately would improve the software for all users. Even though this was not the primary motivation for the OU to , the community behind the system was an important factor, since it ensured continuous support and improvements of the system. And in the same way that the OU benefited from this community, the community benefitted from the work of the OU. From the OU's side there has been a "altruistic" motivation to give developments back to the world, explains Sclater further.

Legal issues

From a legal perspective the VLE deployment did not impose too many barriers. The team had legal consultants, who they could address in the case required, but essentially there were not many problems. Given that Moodle is available under a GPL license, the team did not have to cope with license costs and agreements.

The only issue that came up was related to the integration of previously deployed systems into the Moodle infrastructure, namely that some license agreements had to be checked and sign-on integrated. As some programs were developed by the University itself, they only had to to find ways to integrate proprietary applications, or develop similar functionalities from scratch.

Perhaps more challenging than the technical aspects the OpenLearn project had to face the legal aspects of such an undertaking , and it required a significant amount of research and legal consulting before the OU could publish its content for free.

Change management

As mentioned before, the perhaps biggest challenge in the introduction of the new VLE within the OU was related to change management. On the one hand, there were the technical innovations

which had to be developed or improved, and on the other hand there was the staff and the students, who had to be carefully familiarized with the new solution and its functionality.

The University had very high requirements with regard to the new VLE, since the system is at the core of their business. After all, communicating with their students through distances has always been, and will always be the teaching style at the Open University.

In the fifteen years before the project started in 2005, the OU relied heavily on a series of programmes for the administration of courses, the distribution of information, and the registration to courses, and so forth. These were not on a centralized place, had different user interfaces (UI), and were at least partially outdated. The new VLE had to address these issues equally, as these would improve the experience for the users, which in turn would eliminate resistance against a new system and facilitate change. This was particularly important as there was resistance to rely increasingly on a new web based platform that would handle an increasing number of tasks. "Some of the skepticism about Moodle is more based on the mistrust of online methods." says Sclater. Especially older teaching staff had relied on paper for the most part of their working live, and changing this impacted most of their working methods, therefore potentially resulting in resistance. For McAndrew the increasing reliance on the Internet and the publishing of most of the OU's course material was surprisingly unproblematic within the related OpenLearn project, given that this project targeted a different user group and that it did not commit any lecturing staff to provide online classes through OpenLearn, but rather asked lecturers to make their materials publicly available. "There was less resistance. […] Essentially we took this forward and directly collaborated with the academic staff involved. So we liaised with the faculties, we invited people to nominate material that they were proud of and felt that the material could stand alone." In this sense, it was a kind of re-usage of the material, or a way of making sure that it would not only be used for a few years at the University and then end up in a folder somewhere in the basement. Although this was certainly new for most people at the University, this found great acceptance across the board.

In order to make sure that the technical part of the new OU internal VLE was understood by all academic staff, a series of about 45 events was held, which members from all faculties attended. In addition to that, there were also several trainings held within the faculties. And to make sure that all question would be answered in the future as well they set up a wiki for this. "This is why it is not a trivial process, just introducing a VLE like this", as Sclater sums it up.

Eventually most people at the OU could see the rising importance of the Internet, especially for distance learning purposes, which justified a lot of the developments and changes that took place. And although the Internet makes many processes more interactive, the learners are still asked to pull out pen and paper, to do their work and practice. "Interactive does not mean flash", ads McAndrew.

Cooperation and assistance of government services

Most of the developments of the Moodle VLE and the OpenLearn projects were initiatives that were carried without much governmental assistance. Clearly, the OU is a public funded institution, but there was no dedicated funding support specifically for such projects.

Even though the OU hardly needed any assistance of any government services for their project. As Sclater points out there is a place for higher education institutions to find guidance for Open Source projects and initiatives, such as the OSS Watch (Open Source Watch), that aims at providing "unbiased advice and guidance on the use, development, and licensing of free and open source software"(www.oss-watch.ac.uk). In addition to providing direct assistance to Open Source projects in the higher education sector, OSS Watch runs also a number of workshops and forums, which educational facilities can attend throughout the year.

Cooperation with other universities and the online community

Before the introduction of Moodle and the OpenLearn platform, the OU was not the only institution that had the ambitious plan of bringing their IT infrastructure and working methods up-to-date. Especially other distance learning universities were very interesting partners to talk to, as most of them faced similar issues. "We certainly had a lot of discussion with various other Moodle users, and we have lots of collaborations and various projects with universities around the place", states Sclater. These discussions provided important information before the project started, and the OU could get an understanding of common mistakes and misconceptions. The Open University of the Netherlands and the Fern Universtität Hagen in Germany were particularly interesting examples, that had underwent similar changes and had to adapt their working methods to the Internet.

For the development of the Moodle VLE however, the OU saw little need for direct cooperation with other universities, given that each university has different requirements and specific needs. What was right for the OU in this respect, may not not been the best solution for another university. The most important source of information and cooperation for the OU therefore was the Moodle community itself. As Sclater illustrates: "What we've found is that with Moodle, we're part of the world wide community, and that's really the best forum for collaboration and development." This means that you can get almost instant feedback for any development that you publish, and you may find answers for anything that you might want to develop. And by having a large user base, which Moodle certainly has with roughly 28 million users and 2,8 million courses, most bugs and glitches are found very quickly. Responding to the question if the University has a concrete partner university, or outside support company somewhere in the UK or Europe, Sclater says: "It wouldn't make sense to restrict it to the UK or Europe. You're not getting all the expertise that's around."

The OU cooperates with the Moodle community in various ways, explains Sclater. On the one hand, the University is attending Moodle conferences and forums as participants or speakers. These are important events for the exchange of information and ideas with other users. Through such events the Moodle community, including the OU, can get a feel for what directions future developments

should take and which functionalities need to be enhanced or developed.

The staff in charge of the maintenance of the OU VLE is constantly monitoring and contributing to discussions at Moodle.org that are in the area of their interest. This ensures that the OU is always up-to-date with the latest developments and ideas of the community. Furthermore, this is the prime source of user feedback, as bugs in the system can be discussed or problems in new contribution highlighted, amongst other aspects.

With regard to the code contributions, the OU uploads most developments to the community that they consider ready for a wide use. As mentioned earlier, this is very important for the community and the OU alike, given that both benefit greatly from this. Through the forums and discussion boards, the OU can learn about shortcomings of their development and improve them accordingly. And even before releasing a new development to the community, the University sometimes publishes "specifications for new modules or adaptations to them", says Sclater, "which gives us invaluable feedback and also keeps others informed on what we're doing." In addition to the discussions and conversations that take place on Moodle.org, the OU also benefits from a bug log that lets them know exactly what errors occur with the system, if the users decide to report these. This is an essential source of feedback to the developers at the OU, given that it can tell them exactly which errors occur most frequently, and which they consequently have to fix.

With regard to community activities (i.e. code submission, discussion, etc.) the OU mainly focuses on the Moodle.*org* website. Next to this however, there is also Moodle.*com*, which operates independently and where a large group of so-called Moodle Partners offers a range of commercial services to Moodle users, which may enhance the system according to specific needs. The developments that have been initiated through this channel, are not automatically streamed back to the Moodle system at Moodle.org. The team at the OU is therefore commissioning relevant contributions from the Moodle.com website, such as "new roles and permissions infrastructure and accessibility enhancements" to the Moodle.org website, explains Sclater. This is an important task, as it helps to ensure that all Moodle users can benefit from developments that take place within the Moodle ecosystem. Thus, in a nutshell, the OU has drawn important information from other educational institutes, and has cooperation with them in several projects, but for the development and maintenance of their VLE, the online community has been the best partner of choice.

Evaluation

Achievements / Lessons learned

The introduction of Moodle was a "very ambitious, well funded, and highly structured programme", that was "probably typical for this institution" as Sclater explains. Given that distance communication is at the core of the OU's method of operation this very structured approach appears absolutely necessary to ensure that the system would reliably do what it needed to do.

With regard to the choice of an Open Source environment for their VLE, the University had tried

different systems, of which Moodle simply appeared as the best choice for the OU. Admittedly the system still required a large number of of modifications, improvements, and additions, but today the system fulfils the OU's requirements. "The fundamental point is that we have a working Virtual Learning Environment that is scalable, robust and feature rich and that is being used increasingly in our courses" highlights Slater. Even though some people would have liked to see a dedicated commercial support partner in this process, the team in charge of the VLE quickly realized that the best source of expertise is freely reachable through the Moodle community. The invaluable feedback that they get for code contributions in the form of new developments or enhancements, through bug reports and discussions has become essential to the work on the OU's VLE. The altruistic approach clearly is a welcome addition to this, as not only the OU can benefit from this large project, but also any other Moodle users world wide. The reasons for this give-and-take relationship are thus of a mutual benefit, which is an important backbone of the Moodle community. As McAndrew explains, the same has been true for the content side at OpenLearn, where giving back to the community and sharing content was a motivation that made the project interesting for most people involved.

In addition to these altruistic motivations, the OU also sees a clear pragmatic benefit in the sharing of code and content. The OpenLearn platform, as McAndrew states, attracts many visitors from outside the University. This in turn can translate in students that register for courses at the University, given that it may spark the interest of new students. Thus, "it has been a success operating openly for the University itself, it has helped its image, [and] it has helped public access", as he sums it up. According to estimations the team has made, the number of students that registered at the OU through the OpenLearn platform is roughly 11000 since the publication of the platform. Operating openly consequently brings financial benefits as well, while giving the rest of the world content and developments.

Especially in the early phase of the project, the OU however also faced several barriers to which solutions had to be found. Sclater mentions a few points, which he has also described in a book chapter on strategic IT management of learning institutions (Sclater, 2008):

– *Lack of awareness*: Especially in organisations relied heavily on a print-based approach for the communication and distribution of their learning material, moving the focus on an Internet-based approach might be a challenge. It is therefore essential to communicate the advantages of these working methods and to give clear instructions on how to use them.

– *Lack of incentives*: Although the senior levels at the OU advice academic staff to include more e-learning methods in their work, and produce their content around online platforms, some members of staff are still reluctant to do so. Given that a students and internal resources are increasingly centred around e-learning platforms (i.e. the VLE), academic staff is pressured into using these methods increasingly as well. In this process, once again, it is important to communicate new working methods and give clear assistance where needed.

– *Concern to avoid alienating students*: There is the concern that relying heavily on e-learning methods might exclude some students from participating in courses, as Internet access is

still not comparable to access water. The OU however sees that it should rather focus on leading in new technologies than bowing down to decreasing trends. Already in the 1970s and 1980s the OU has faced similar discussion with the introduction of television-based learning methods, which have diminished quickly with the spread of TVs and audio cassettes. Similar to this, the OU considers that already now about 64% percent of all households in the UK have broadband Internet access, and that this is very likely to increase even more throughout the UK and Europe.

– *Risk aversion*: There is justified concern within the OU that using a system which is under development might be a risk, seeing that it might be unreliable or that functionalities and user interface might change. The VLE development team however made sure that the first version deployed was stable and that only improvements would be added to the system in the future. Basic functions, user interface, and access system would remain the same, and issues with the stability of the system were tackled in advance. Of course, there might be a problem here and there with the system, but this can happen to any other *finished* system as well, which might be less modular or flexible, making it harder to find a solution.

These are just the first barriers such a development might face, and there are numerous other that Sclater explains in detail in his book chapter.

Future plans

In the future the OU will continue to work on improving Moodle, and integrating previous systems into their Moodle VLE. As user created content and participation on Internet platforms is escalating as part of the so-called Web 2.0, the OU is trying to find ways to incorporate this in their online platform. The OU is developing a "a roadmap for the things we want to do in and with Moodle in the future", says Sclater. Already by now, the University is for example present in the virtual world of Second Life, given that an increasing number of students has accounts there. The University hopes to engage in a variety of Web 2.0 communities as they see the potential of these for future learning and communication spaces. Given that students are increasingly used to participating actively in the social networks of the Internet, in whatever form this may be, the OU is seeking to integrate this in their work. As universities and other institutions are still experimenting with this and as that there is constant change of social platforms, the OU is not yet decided on what format they want to employ, but the topic is certainly very interesting for the future.

With the dramatic spread of smart phones and hand-held computers, the OU is also thinking of ways to incorporate these technologies into their communication and information strategy. "We are trying to have an alternative mobile version of Moodle, because I think that smart phones are going to be a massive way of how people are going to access online content in the future." Sclater notes.

With regard to the OpenLearn platform, McAndrew is participating in ongoing research projects on the investigation of the consequences of open learning models, and their value to learners outside

the University. Together with a team of researchers from various universities, they are developing ways to analyse the impact of open education by employing methods on analytics. The progress and the outcomes of this research can be found at the project website www.OLnet.org.

Conclusion

The deployment of Moodle and the free release of learning material as part of the OpenLearn project at the Open University gives a fair indication of how paradigms in the educational sectors are changing.

From a technical perspective, the choice of Moodle as the OU's VLE shows how Open Source products can be well capable of competing with proprietary solutions. It was and is seen as the best available solution that would meet the OU's demands on stability, flexibility, scalability, and also very important: support. Compared to commercial software deployments, Moodle does not rely on one support partner, but features a community of users world wide. With more than 2,5 million registered courses and roughly 28 million users, this is a substantial source of feedback and information, which is invaluable to the work of the OU. By contributing to this community with their own developments, they create a win-win situation, as their tools improve with all the feedback and assistance, and all others users benefit from the additional functionalities added by the OU.

From a social perspective, the OpenLearn project also shows potential new ways on how open educational resources, such as learning materials, might be produced and shared within free and open collaborative environments. With OpenLearn, the OU has made an important step in making content freely available for learners outside the realm of the University, who might not be able to access quality learning material otherwise. This way, the value of the content very likely increased , as a much higher numbers of learners can benefit from it. And besides the benefits for all learners that access the content for free, the OU benefits with regard to the positive image attached to sharing content.

With regard to change management, the OU's case shows that the real costs of introducing a new system do not trace back only to software licenses, development work or hardware acquisitions, but also to the change management. The OU's case confirms once again that old habits have to be broken and resistance to be overcome, which in the case of the OU was done as a step-by-step approach, with guidance of every step that helped fundamentally in creating acceptance and understanding.

Clearly, relying heavily on the Internet and sharing the content of whole courses might be new and strange to people that were used to traditional ways of communication and dissemination models. With regard to the OU, one might argue that it is acting as a forerunner of general trends, which are by-products of the Internet, and which have the potential to change traditional education systems for the benefit of the greater society. Projects such as OpenLearn underline this idea, and it is to see if these effects will actually change the learning environment in the future.

Links

- Open Learn – Learning Space

- The Open University builds student online environment with Moodle and more

- Niall Sclater's Blog – Virtual Learning

- Moodle Statistics

- Moodle Announcements – Open University chooses Moodle!

- Olnet beta – Researching the open world

- OSS Watch - the Open Source Software Advisory Service