

Internationalisation and E-learning Systems: .LRN Case Studies

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Abstract

Two key characteristics of open source software have made it increasingly attractive to educational institutions internationally: customisability and cost. Most commercial Learning Management Systems are designed around processes particular to one country (usually the U.S.) and closed off to customisation by proprietary licenses. Thus, many institutions are finding themselves stuck with a design that is ill suited to their needs and in some cases, not even available in their own language. Furthermore, licensing costs for commercial LMS can range from tens of thousands to over a million dollars a year. These prices, combined with a coinciding dependence on a commercial vendor for development, make the costs of using an online learning platform prohibitive for some institutions, especially those in the developing world. Thus, many organizations are turning to open source solutions that can be freely customised, translated and distributed. One such solution is .LRN, an e-learning platform that provides out-of-the-box capability for course management, online communities, content management, and learning management. In this paper, we present four case studies of tertiary institutions that are using .LRN. The case studies have been selected to highlight the needs of both large and small institutions, and a range of customisation requirements.

1 Background

1.1 E-learning systems

E-learning and collaboration systems have become essential communication tools for educational institutions. However, if an institution buys a proprietary software product, it lays itself open to the risk of vendor lock-ins. For example, if the proprietary software provider drastically changes the licensing agreements or costs, it may not be willing to negotiate according to the needs of the university. The likely outcomes of such a situation are usually unsatisfactory. Either the institution decides to maintain the relationship and some of its needs go unmet, or it looks for a new supplier and it bears the cost of changing the e-learning platform. Tertiary institutions are also wary of the need to protect the value of their intellectual property, such as their training processes and materials, and these are often incorporated into the software platform.

Most commercially written software is kept as a trade secret and companies who own it protect it with copyright law. Copyright holders of e-learning systems, such as WebCT and Blackboard, license the software to universities for a fee. Universities are then able to use it for the purpose stated in the license, but they are not allowed to modify or distribute it. In contrast to this commercially-oriented philosophy, open source software (Hesemeier et al. 2003; Keats 2003) is licensed in a very flexible way. In most cases, it allows organizations to use, copy, modify and distribute software without a licensing cost, and with the only condition being that the software should be distributed to others under the same licensing conditions. These conditions include releasing the source code and acknowledging prior contributors. Several licenses exist and are discussed in more detail at www.opensource.org. In general, this method of licensing has been adopted by many users as a way of allowing customisability and reusability, and at the same time reducing costs.

One primary example of the need for customisability is multi-language support. WebCT claims support for 14 languages, although that is only including all previous releases. The latest version, WebCT Vista, is actually available in only 6 languages. (WebCT, Inc. 2005). Blackboard's multi-language edition of its system is available in 12 languages. (Blackboard, Inc. 2005). Generally, with commercial products, translations are only created for languages that represent the largest markets. .LRN allows translation into any language by anyone requiring the translation. Therefore, it is currently being translated into 41 languages with all core packages already complete in 18 languages including: English, Spanish, Portuguese, Italian, German, Dutch, Chinese, Korean, Arabic, Norwegian and Malaysian. A live tally is available at translate.openacs.org. Some institutions, wishing to customise .LRN to their own particular regional dialect, have provided translations for these as well. For example, there are translations for two types of Norwegian, as well as Spanish (Spain), Spanish (Columbia) and Spanish (Guatemala). A functionality that is particularly useful to multilingual countries and universities is the fact that each user can choose their own language individually. Therefore, as an example,

you could have a system in Spain where some students use it in Spanish, others in Catalán and others in Basque. Furthermore, those in an English class could switch their view to English when they desired. In a similar fashion, another useful .LRN functionality allows users to switch timezones themselves, so when they travel, their calendars get updated to the zone they have selected.

Open Source software is increasingly popular in institutions that have a tradition of sharing knowledge, as is the case for universities, schools, and other publicly funded institutions. These organizations benefit significantly from Open Source software since it allows them to customize it thoroughly, and they are not tied to a regular license fee. Open Source software is normally built at universities and by consulting companies who profit by providing support to corporate customers. For example, the Linux operating system is one of the most well-known Open Source projects, and companies like IBM profit by servicing customers who chose it.

In this article we describe how .LRN is currently used to support online courses at Birzeit University in Palestine, Galileo University in Guatemala, Heidelberg University in Germany and the Sloan School of Management at the Massachusetts Institute of Technology (MIT) in the U.S. The case studies selected are examples of large and small institutions that required a customisable system to meet unique cultural and language requirements. The exception is MIT that we have included for historical and comparative reasons. Sloan at MIT was the first user of dotLRN and continues to customize it as its requirements change over time.

1.2 The .LRN system

.LRN applications are created as modules that can be added to a course and easily administered by a professor or instructor. Some of these applications include discussion forums, calendars and file sharing, assessment tools for quizzes and tools for submissions. .LRN also includes administrative functions that enable access control and roles and permissions to be flexibly managed with large numbers of users. Most of the standard functionalities available in other e-learning systems [Horton 2000; Hesemeier et al. 2003] are available in .LRN. Its biggest strength are its collaboration functionalities, while a weakness is probably in the tools for managing students such as grades and enrolments. The system uses the OpenACS application framework (Calvo & Peterson 2002), and is supported by Unix, Linux, or OSX platforms, using either the Oracle or PostgreSQL RDBMS.

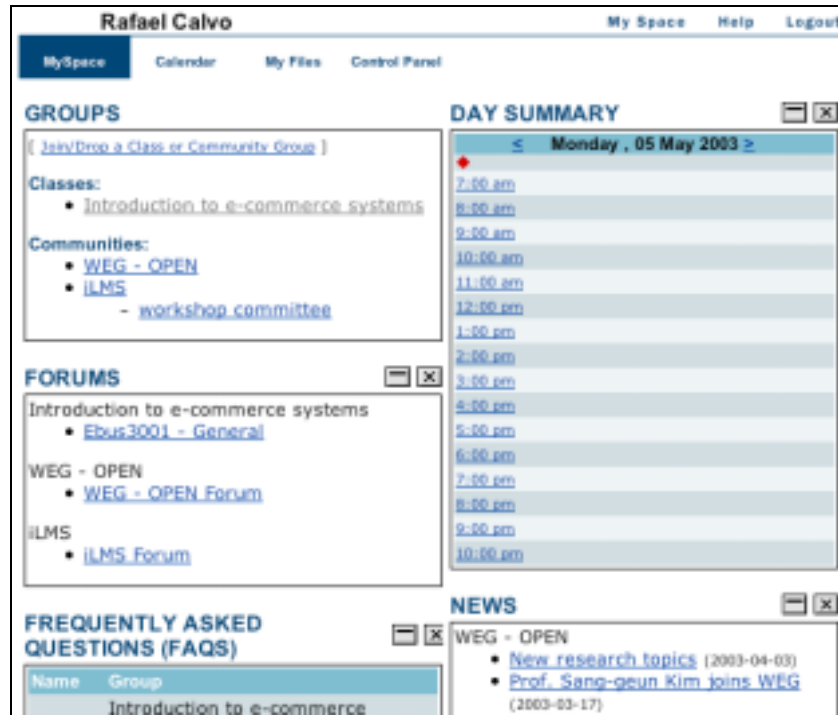


Figure 1 shows a personal portal in .LRN at the Web Engineering Group, University of Sydney.

2 Case Studies

The questionnaire used to obtain these case studies was designed to address, not only technical requirements and how they were met, but also what effects the system has had, if any, on teaching and learning processes and the quality of learning outcomes.

2.1 Birzeit University, Palestine

Birzeit University was the first institution of higher education to be established in Palestine. With 5267 students, this young University strives to promote excellence by providing quality academic teaching, training, research and relevant community programs within the context of sustainable development, emphasizing social awareness and democratic civic values in a free Palestinian society.

Since March 2001 the University has been severely disrupted by Israeli military checkpoints and students are denied access to the University. The University required a low-cost, scalable system that had an interface in Arabic. In 2001, the university's computer center decided to build an e-learning platform to allow students to have access to class materials online. In an article titled "To Reach Past Curfews Palestinians Go

Online” (Mitnick 2004), The New York times quoted the University’s Information Technology Director, Marwan Tarazi as saying: "It became a priority for students to start using computers. Those who didn't have access at home would get together at a friend's house or go to an Internet cafe."

Using .LRN, in March 2002 Birzeit University deployed "Ritaj" (the "great portal" in Arabic). During that year, over 2000 faculty and students utilized Ritaj to review course outlines, presentations, communicate with classmates, place and retrieve course information, and discuss classes. Since one of the obstacles to learning was face to face preparation for classes, .LRN also became a staff portal so teaching and professional staff could collaborate on-line. Ritaj was fundamental in enabling the University to complete courses during 2002 despite closures, curfews and other disruptions.

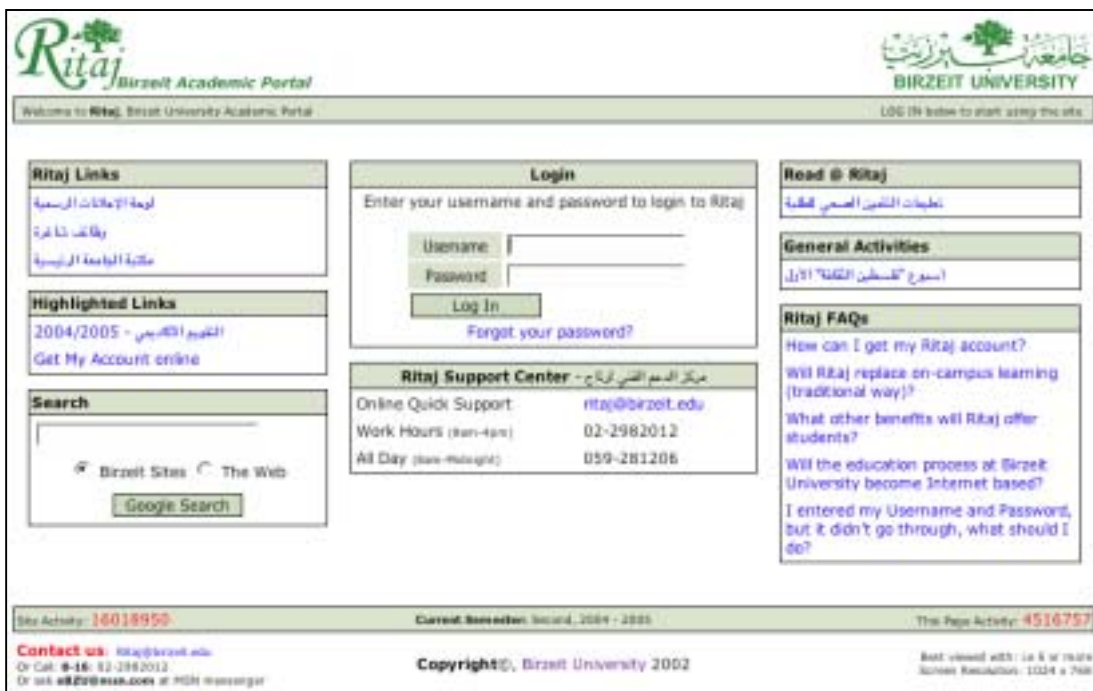


Figure 2 – Entrance screen for “Ritaj”, Birzeit University’s Academic Portal

2.2 Galileo University, Guatemala

The first University in Guatemala with an Information Technology focus, Galileo is now a leading education provider in Central America. Galileo graduates are committed to using their strong technology background to address social development issues in both Guatemala and the broader international community. The University serves a total of

40,000 students, of which 8,000 are campus-based. The other 32,000 are located throughout the country.

Because the majority of Galileo University's students rely on distance learning, an online delivery platform was essential from the start. In 1998, Galileo began the search for an open source solution to their online learning needs and selected the .LRN platform for its extendability and customisability. ".LRN was the only open source platform able to grow along with us," said Rocaël Hernandez, Development Director, Research & Development at Galileo. ".LRN's flexible APIs allowed us to create new features to meet our specific user needs."

Galileo eventually developed their own .LRN-based e-learning application dubbed the Galileo Educational System (GES). GES currently handles all aspects of course administration: assignments, grading, discussion groups, bulk email, and calendaring. It also has advanced e-learning features, including sophisticated assessment tools, surveys, and even a short messages to mobile phones (SMS) interface for students and professors. Customisability allowed Galileo to integrate the platform with existing university systems, via an LDAP service facilitating external authentication.

Today, GES has 16,000 registered users, and actively supports 524 courses, 100 professors, and nearly 3,000 students. GES delivers over 55,000 sessions a month and handles thousands of transactions per day, with multiple concurrent users. In the coming year, Galileo plans to roll out a .LRN-based course catalog made available by the community, and to develop more advanced features for the assessment system. With a low total cost of ownership and in-house development costs, .LRN has provided the flexibility and functionality that the university needed.

2.3 Heidelberg University, Germany

The University of Heidelberg, over 600 years old, is the oldest university in Germany and one of the oldest in Europe. It enrolls almost 30,000 students annually and its academics have included eight Nobel Prize winners.

Heidelberg's first standard e-learning platform was WebCT. The university started tests in 2000 and went live with a number of courses in 2001. Soon after its launch, the academics and administration of the university found that it had some drawbacks. According to Heidelberg representatives, "The e-learning platform was designed around a North American educational framework. Consequently its adaptation to the European market did not always align with the examination traditions of different universities." In addition, its redevelopment was limited to a one-to-one translation of the software. This affected its usability and was perceived to have a negative effect on the students' learning experience.

The licensing agreement restricted the university from making modifications to the software so it could be tailored to the needs of the students and the university. Thus, it became difficult to justify the expenditure given the little influence the University was likely to have over the future development of the system. In addition to the pedagogical concerns, WebCT changed its license fees, which, if renewed, would have resulted in a considerable cost increase for the same functionality. Consequently the University realized the need to invest in an e-learning infrastructure that would provide immediately desirable features plus an ability to customize the software at a deep level, so that longer term benefits could be realized.

Since it is a common practice across universities to share ways of teaching and learning, the University of Heidelberg considered that e-learning should not be the exception. Control over the tools used for collaboration in learning and research is essential for institutions that want to retain control of their strategic direction. The University also felt that development of the learning and research tools should be subject to peer review and commercially unrestricted.

The first stage of implementation of .LRN at Heidelberg is serving 2-3,000 users. Soon, it is expected that all 25,000-35,000 faculty, students and staff will use it. This year Heidelberg is running 100-150 courses on the .LRN platform. Due to its language requirements, Heidelberg is the main driver behind an internationalisation effort. Heidelberg's production system runs .LRN on Solaris and Oracle but development using Linux and Postgres has been very successful.

2.4 Sloan School of Management, Massachusetts Institute of Technology, USA

Sloan School of Management is MIT's business school and the origin of the .LRN project. The first developer, ArsDigita Corporation, now part of RedHat, collaborated with Sloan in the original implementation of .LRN. This collaboration was formerly called the ArsDigita Community and Educational Solution (ACES) (Calvo & Sabino, 2001; Gilroy 2000, Meeks & Mangel, 2000). Eight classes used the system as part of a pilot program in Fall 2000, leading to a user community of approximately 700 students and faculty. The pilot program proved to be successful, therefore Sloan extended the use of .LRN to all its courses through the SloanSpace v1.0 portal. User's feedback and the experiences gained throughout the first version of the system were used to improve the design of SloanSpace v2, currently in use. The underlying platform is the .LRN system discussed in this paper.

MIT is a world leader in many areas, particularly in sharing software and ideas. .LRN, together with the Open Knowledge Initiative, the D-Space digital library project and the Open Courseware project are a manifestation of MIT's vision for educational technology. Sloan says it runs all of its classes and clubs on .LRN, serving over 11,000 users with 3,000 unique logins each day. According to Sloan's CIO, Al Essa, "Over five years, we've spent roughly \$500,000 to deploy, extend, and maintain .LRN. Our benchmarking suggests we've spent roughly 25% of the cost of similar systems built with commercial

software or custom homegrown code." The cost advantage for Sloan means that they can use the savings to develop innovative customised additions to the system that meet particular student and staff needs. For example, Sloan is using .LRN to implement advanced simulations, such as a financial instrument trading game, and a class notes-style application using weblogs and RSS.

Conclusion

We have described how four tertiary institutions in four different countries are using the .LRN e-learning and collaboration system based on unique individual institutional requirements. Common needs of the institutions included adaptability so that the platforms could support local languages and other institutional and cultural requirements. Although a low-cost system was important for two of the institutions (Birzeit and Galileo) it was not a priority for the others. All four of the tertiary institutions have improved online staff collaboration by using .LRN, and this is perceived, after teaching and learning, as the one most important contributions of the system.

Other institutions, not discussed here, have had similar experiences and are using .LRN for the abovementioned and other purposes. These include: Cambridge (UK), University of Mannheim (Germany), University of Bergen (Norway), UNED (Spain), and the University of Sydney (Australia).

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