From LMS to Open Learning Offerings and Back. One Open-Source Platform, Multiple Learning Scenarios

Monika Andergassen, Gustaf Neumann, Petra Oberhuemer

Vienna University of Economics and Business, Vienna, Austria
monika.andergassen@wu.ac.at
gustaf.neumann@wu.ac.at
petra.oberhuemer@wu.ac.at

Abstract. When Higher Education (HE) institutions decide to offer learning material for the public, they share them on dedicated platforms, e.g. MOOC portals, or they set up their own platform. Building and maintaining a different platform for on-site and off-site students is cost-intensive. In this paper a research-in-progress is presented, which follows a modular approach to identify different needs for on-site and off-site learning. This might be used for developing hybrid LMS/MOOC solutions which provide a seamless integration of on-site and off-site learning offerings. The case of the Vienna University of Economics and Business is described as an example.

Keywords: Open Learning Offering, LMS, MOOC, e-Learning Infrastructure

1 Introduction

For improving its "Third Mission" (OECD, 2011), the Vienna University of Economics and Business (WU) is currently working on the development of open learning offerings, i.e. learning materials and modules intended for the public. In order to have the full control over the development of the learning design, but also due to WU's more than 15 years of experience with the operation of one of the largest e-learning platforms (Mödritscher, Neumann, & Andergassen, 2013), the demand was expressed to find an in-house solution for hosting the new offer. Since both the creation of the learning materials and the maintenance of the infrastructure can be very expensive (Dreisiebner, Ebner, & Kopp, 2014), and due to limited resources, the question arose, whether a new platform is needed to offer the modules or whether the existing Learning Management System (LMS) infrastructure could be extended to serve both the traditional LMS needs of the university and the needs of a platform open to the public.

The current paper investigates this option. Section 2 reviews the literature regarding LMS and MOOCs, which are currently the most prominent examples for open learning offerings. Section 3 lines out requirements for a platform which serves both as LMS and as platform for open learning offerings. Section 4 describes how these requirements are currently being implemented into the LMS of the WU. Section 5 concludes with an outlook and next steps.

adfa, p. 1, 2011.
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2 Comparison of LMS and Open Learning Offerings

The way e-learning is provided to the public has changed in the last years. Initiated by efforts of the MIT OpenCourseWare project (Abelson, 2008), resources shared via public platforms such as educanext (Guth, Neumann, & Simon, 2001) or Merlot (Orhun, 2004) were created, mostly for making open educational resources publicly accessible. With the development of MOOCs (Massive Open Online Courses), the focus shifted from sharing resources towards providing online classes, typically equipped with options for the learners to acquire certificates. Today, the term MOOC is used for a variety of public learning offerings, which go beyond the bare learning material provision. So the term MOOC is sometimes a misnomer, since many courses are not really "massive", and some learning offerings have smaller granularity than typical university "courses". Nevertheless, we use the established term MOOC to refer to such offerings.

Depending on the didactic setup of a MOOC, "xMOOCs" and "cMOOCS" have become prominent terms. The x in xMOOCs refers to an "extended" version of a traditional university course, while the c in cMOOCs refers to a constructivist/connectivist didactical setup (Siemens, 2013). Key features of a typical xMOOC include a specially designed platform software, video lectures, computer-marked assignments, a shared discussion space, badges or certificates and some learning analytics. To date, most MOOCs could be classified as xMOOCs, for instance the MOOCs offered by companies such as Coursera and edX. The scope of the WU open learning offerings comes, according to the definitions given above, closer to xMOOCs. Therefore, the following sections will mainly focus on how to integrate a traditional LMS, which could be described as a centralized platform to administer, plan, facilitate, assess and monitor student learning from a teacher-centric view (Wright, Lopes, Montgomerie, Reju, & Schmoller, 2014), and xMOOC functionalities.

Existing approaches describe the use of Open-Source LMS for MOOC delivery, for instance (Meinel, Totschnig, & Willem, 2013) who evaluate Canvas LMS for MOOC usage. Other approaches include the delivery of open-source variants of MOOC platform software, such as Open edX, for public operation (Ruiz, Díaz, Ruipérez-Valiente, Muñoz-Merino, & Kloos, 2014).

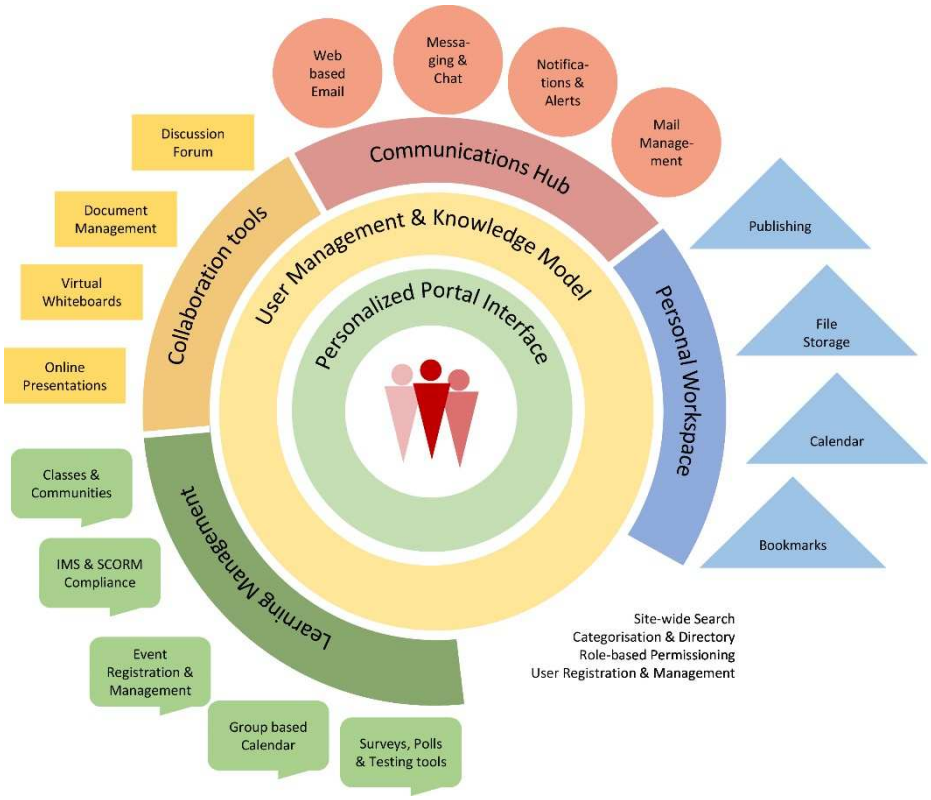
The novel approach of the current paper is that one software installation is used to serve both LMS and open learning offerings under one hood, in an all-in-one approach.

3 Requirements towards an LMS / xMOOC platform

Figure 1 shows a generic model of online collaboration from a user perspective. It is not exhaustive but is intended to highlight some central aspects which need to be considered when discussing requirements towards an LMS compared to an (x)MOOC platform. In this model, requirements and features are organized concentrically around the user, departing from a personalized portal interface, basic requirements such as user management and an underlying knowledge model. Around these core functionalities, additional aspects such as features for learning management, collaboration, communication and personal workspace tools are arranged. Finally, requirements such as user

registration and role-based permissioning are considered. The following requirements were identified for a platform which offers LMS and MOOC platform functionality in an all-in-one approach.

Fig. 1. On-line collaboration model, reproduced from ("xowiki - OpenACS Proposal - Sample," n.d.)



1. User Management: Two types of accounts need to be digested. Regular students of the HE institution are usually enrolled according to a complex admission procedure. Their accounts are processed via a campus management software and synchronized with the LMS. The public users of the MOOC platform, by contrast, require the option to register directly on the platform with little hurdles. Regular students should have access to the MOOC platform with their existing student account, without any additional registration.
2. Personalized Portal Interface: The LMS personal portal page usually includes a list of course memberships, aggregated information from these courses, and some curricular information. In a xMOOC platform, usually a student might not attend many courses in parallel such as in a study program. Instead of aggregated news, in this context it is more important to give the user an easy way to resume the course where

he left at last login, and since he doesn't follow a strict study program, recommendations about new and follow-up courses are important. An overview of earned badges and certificates might enhance the motivation to go on studying with MOOCs.

3. Communication hub and collaboration tools: Regardless whether a course is offered via an LMS or a MOOC platform, having a time-based or self-paced course schedule is a decisive factor regarding the need for communication and collaboration tools. Only time-based courses demand for a communication hub for synchronous communication and for collaboration tools, while for self-paced learning scenarios, such as the open learning offerings of the WU, they might be of less relevance. However, asynchronous communication channels such as email or feedback might make sense also in self-paced settings.
4. Learning Management: Signing up to courses at universities is usually connected to a variety of selection criteria, while MOOCs do not apply such selection criteria or participant limitation. An all-in-one system needs to handle course memberships via an approval system for traditional LMS courses as well as approval-free access to MOOC courses. Furthermore, in contrast to traditional HE courses, course completion is often not the main focus of attendees of MOOCs (Milligan, Littlejohn, & Hood, 2016). To reward more granular learning strategies, MOOC attendees could be rewarded, for instance, with badges for completion of single course units (Hadi & Gagen, 2016). Thus, the LMS needs to allow to define new forms of "completion" within courses in the MOOC context and to award badges. The transfer of badges from the MOOC to the LMS context should be facilitated.
5. Knowledge Model: The creation of learning resources can follow similar principles in an LMS and on a MOOC platform. In the all-in-one approach, the content developer is able to easily transfer resources from one context to the other. If quality assurance measures are required by the institution, approval steps could be easily integrated in the publishing workflow of a resource. Learning Analytics and Recommendations might be more marketing related in MOOCs than in an LMS context.

4 Case Study: LMS and Open Learning Offerings with Learn@WU

This section gives insight to a research in progress at the WU, where its LMS Learn@WU is adopted according to the requirements listed above to serve as an LMS and a platform for open learning offerings. Learn@WU is based on the Open-Source software OpenACS (Demetriou, Koch, & Neumann, 2006) and .LRN and has been in university-wide productive use since 2002. In peak times, the platform is visited by up to 17,000 users per day, with up to 4 million page views. The range of services includes administrative tasks such as course and membership administration, syllabus, learning material distribution, assignments, gradebook, forums, chatrooms and mail. In the last years, the investigation into learning analytics has increased. Also, the focus has shifted from the pure distribution of learning materials to an approach which focuses on learning activities (Andergassen et al., 2015).

For the current project, the subsite-awareness of OpenACS is the starting point. It is the key concept which enables to run LMS and MOOC functionality parallel in one installation. Thus, one subsite will serve the LMS and one the open learning offerings. This allows to use one code base for both services, but with individual customization of both.

While the LMS subsite will use the .LRN framework for handling all courses and memberships, the open learning offerings will run on pure OpenACS, since the structure of the modules is more simple there.

The LMS subsite will be accessible only for enrolled students and teachers of the WU. The open learning offerings will additionally be accessible by the public. The subsite architecture allows regular students to log in to that subsite with their existing student account.

The applications, in particular the learning activity applications, run on both subsites with the same code base. An additional advantage is the possibility to easily transfer learning materials from one subsite to the other via an easy to use clipboard in the web frontend.

Customization of design through different themes is possible. Particular the open learning offerings needs to be attractive to visitors, since in comparison to the LMS all users come on a voluntary basis. Responsiveness of design, lightweight and state-of-the art design, user-friendliness are key issues.

5 Summary and Outlook

This paper has described an approach how to adapt an e-learning platform to serve traditional LMS usage as well as open learning offerings for the public. The LMS Learn@WU was described as example. The first implementation steps show promising results. Furthermore, pilot studies with students for the quality assurance of the learning materials have already started and the feedback is being implemented.

However, some of the features described above, e.g., the definition and implementation of badges management, still need to be tackled. A further future challenge includes the provision of sophisticated search and filter functions in order to provide easy-to-find offerings to different target groups. Finally, the scalability of the system is an issue since it is difficult to anticipate the response to the open learning offering when rolled out for global use.

6 Literature

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