

Choosing a Learning Management System

The choice of a Learning Management System (LMS) and the necessary infrastructure for online learning will have significant consequences for a ministry. Choosing an LMS requires careful consideration of ministry and student needs. The LMS will need to offer enough features to support needed learning activities, while being simple enough to allow easy access and use for both students and instructors. The ministry should also consider issues of infrastructure, e.g., whether to house the LMS internally or to host it via external servers. In this article, eDOT will offer guidance and suggestions about the choice of an LMS and infrastructure based on our experience and the experience of other ministries.

The Role of the Learning Management System

When learning leaves the classroom, it moves into an online space. This online space is known as the Learning Management System. The LMS will house course activities such as reading assignments, containers for completed student projects, and forums for interaction on learning topics. The LMS will be the place where learning occurs. As such, the LMS needs to support learning activities that are deemed essential for the ministry to achieve the educational goals required of students. There are many choices of learning management systems, each with strengths and weaknesses. Examples of an LMS include Blackboard, Moodle, eCollege, and JoomlaLMS.

Considerations for Choosing a Learning Management System

In order to select the best LMS for the ministry objectives, it is necessary to answer some questions.

- **Should the ministry purchase a Learning Management System or use an open-source Learning Management System?** In the world of ministry, cost is often a significant factor in the consideration of new projects. As the implementation of online learning is considered, the issue of cost will likely become a topic of conversation. Included in the discussion of cost is often the assumption that *free* (or in the case of computing software, *open source*) often means *worthless*. Because there are open-source

LMS packages available, a ministry must determine whether an open-source (free to use) LMS will meet the educational needs of the ministry. Several LMS brands require purchase and ongoing fees for usage. The LMS known as Blackboard requires purchase in addition to licensing based on student population. Other LMS brands are open source, meaning that there is no fee for usage regardless of student population size. Moodle is an example of an open-source LMS. Cost is certainly a consideration in the choice of an LMS.

- **Are purchased Learning Management Systems superior to open-sourced alternatives?** The old adage “You get what you pay for” means that product value increases as product cost increases. In the world of open-source software, that adage is not true. Certainly a company such as Blackboard¹ would lead you to believe that its product has no comparison in the marketplace. Independent research suggests that the choice to use a purchased or open-source LMS is more about preference and convenience than superiority based on price. An article² from the University of New South Wales (UNSW), Australia, suggests that Blackboard and Moodle provide the same service: delivering course content to students. UNSW uses Moodle for its online learning programs and believes that Moodle better supports **student-centered** learning and that Moodle is easier to learn to use. eDOT has found Moodle to be a robust, fully-featured LMS that meets educational goals and allows partners to tweak for both theming (institutional logos and color schemes) and language preferences. eDOT would recommend Moodle as an LMS even if cost was not an issue. In our experience Moodle has supported every instructional goal and administrative need that was asked of it. Moodle has continued to improve its product while giving users the freedom to add or modify how the LMS is used within the institution.
- **What learning activities are required within the Learning Management System?** Assuming that the ministry has already identified the needs and rationale for using online learning in the organization, the next step is to identify what types of learning activities

¹ eDOT intends no disrespect for Blackboard or any other paid product. Many organizations and ministries use Blackboard and paid products to their advantage. eDOT uses a variety of programs that have price tags. The point of this discussion is that, for a ministry with a limited budget, there are open-sourced alternatives for Learning Management Systems offering the same level of service and instructional value as products with a price tag.

² “How is Moodle Different from Blackboard?” <http://teaching.unsw.edu.au/moodle-how-is-it-different-from-blackboard>. Accessed 19 August 2013. Other articles of comparison are available using a search engine and terms such as *compare learning management systems*.

are necessary in the LMS. Some common learning activities include discussion forums, chat areas, file uploading (for submission of completed assignments), quizzes and tests, journaling, photo galleries, video conferencing, FAQs, and glossaries. There are many options for learning activities depending on the LMS. Choose those learning activities that are necessary to achieve educational/instructional goals. It can be tempting to choose learning activities that are cool, flashy, or new. Avoid this temptation and select learning activities as guided by instructional goals of the ministry. As you approach LMS vendors, it is ideal to have all requirements of the LMS clearly defined. The better the ministry expectations are defined, the more able the LMS vendor will be to address those expectations.

- **What are critical guidelines for selecting a Learning Management System?**

- Remember that the choice of an LMS is not an Information Technology (IT) system purchase. The LMS is a piece of software, but that should not mean that the decision process is left solely to the IT department. The LMS should be evaluated based on the extent to which it meets the ministry's educational goals. The choice of an LMS does not require a certain level of IT savvy. Involve many people from the ministry in the decision process, be they administrators, instructors, IT staff, or students. The more input the ministry receives, the better informed it will be to make a sound decision.
- Choose an LMS that has a large development and support staff, is implemented widely, has support in the local language, and has regular development and update cycles. Systems such as Blackboard and Moodle have large bases of support staff and are widely implemented by many customers. They also have regular development and update cycles. The goal here is to choose an LMS that will continue to exist for a long period of time. By comparison, eDOT would advise against a product such as Google's Course Builder (<https://code.google.com/p/course-builder/>) because the product does not yet have enough traction in the marketplace and will likely not have the ability to localize the settings (that is, to offer the menu in the local language).
- If considering the purchase of an LMS package, ask the vendor to provide a full trial version. This will allow the ministry to test the LMS and see whether it meets

the educational requirements of the ministry while also providing the ministry some experience in how the LMS may be managed and experienced by users. Note that by contrast, an open-source LMS package may be downloaded and installed for testing purposes with no requirements or commitments.

- Choose an LMS that is accessible to users regardless of computing platform, including mobile devices. Within reason, an LMS should be able to support user access without requiring a specific platform (be it Windows, Mac, Android, iOS, etc.). eDOT has experienced the frustration of working with an LMS that required a specific computing platform and thus would strongly encourage ministries to avoid such a platform-specific LMS.
- Avoid any system that is proprietary to your organization or has only a single or small group of developers. It may be tempting to have a custom-built LMS offered by a local person who claims to be able to build a perfect system suited to the ministry's specific educational needs. eDOT is aware of one ministry that sought a custom-built LMS system, costing in excess of \$90,000. The ministry never launched online learning, having never found the funds to purchase it. eDOT was shown the specifications for the custom LMS and concluded that it included nothing new, meaning another LMS (such as Blackboard or Moodle) could have accomplished the learning goals for the ministry. It is unlikely that any custom-built LMS will provide capabilities that are not already available through existing LMS packages. It is risky to base an entire online learning program on a custom-built LMS that does not have a large development and support staff.
- Research what others are saying about the LMS. It may be necessary to see product demonstrations, but do not purchase an LMS based solely on a single sales demonstration. Conduct online research about the LMS and ask the LMS vendor for references from both satisfied and dissatisfied customers. This research will inform the ministry of use cases, capabilities, and potential problems that other users have experienced with the LMS. Know, however, that no product is perfect and error free. The ministry should seek the most problem-free LMS or the LMS that fixes problems the quickest.

Infrastructure to Support and Host the Learning Management System

In addition to questions about the LMS, the ministry needs to consider questions about the infrastructure that will support the LMS. These questions focus on how the ministry will host and support the LMS, either internally within the ministry or externally using a cloud-based hosting service.

- **Does the ministry plan to build servers for the Learning Management System on-site or use a cloud-based³ hosted approach?** This is a multi-faceted question involving issues of reliability, scalability, security, and cost. Allow us to discuss each item in this question separately and then attempt to draw some conclusions.
 - **Cost:** Cost is a consideration in decisions about infrastructure. The question may be stated as: Will building a server on-site cost less than hosting the LMS in the cloud? An on-site server will tend⁴ to have a single, fixed cost, while a cloud-based hosting service will typically have a monthly, quarterly, or annual fee. Consider the other factors in this discussion before jumping to a conclusion that an on-site server is the least expensive option.
 - **Reliability:** A car that will not start is useless to its owner. Likewise, an LMS that is frequently down for maintenance or because of problems does a ministry no good. Whether choosing to host the LMS on-site or with a cloud-based service, the question of reliability of service should be a major consideration. Reliability also depends on the personnel who manage the server. Within the question of reliability lies another question: Will there be a person on staff **capable** of reliably administrating and managing that server? That answer will give guidance about whether the ministry should consider hosting the LMS on-site or via a cloud-based hosting service.⁵
 - **Scalability:** The question of choosing to build on-site or to use a web-based hosting service must also address the question of scalability. Scalability refers to

³ In this article, the *cloud* refers to any Internet-based hosting services. Some examples include Amazon Cloud service and hosting services offered by 1&1 in Europe. There are many hosting services available. eDOT has experience with both Amazon and 1&1 in Europe.

⁴ This dichotomy may be misleading, as on-site servers will require ongoing maintenance and service—meaning that there may be “hidden” costs in an on-site server.

⁵ If Moodle is chosen as an LMS and the ministry desires to use a cloud-based hosting service, eDOT would suggest the ministry consider using a Moodle partner. These partners (moodle.com/partners/) can provide assistance such as implementation, training, or hosting a Moodle instance online.

the ability of the infrastructure to grow with demand (such as growth in the online student population of the ministry). There is often a temptation to build a server on-site to meet **existing** student population needs without considering the potential for student growth and the corresponding growth of infrastructure. An on-site server may make sense in terms of existing student needs and the desire to keep the LMS secure; yet, it may limit the ministry's ability to grow the online learning program quickly if additional students seek to enroll in the online learning program. Conversely, a cloud-hosted LMS generally has the ability to scale very quickly. Depending on the level of administration that the ministry chooses, this may require a support ticket, or it may be as simple as logging into the server and changing server settings (RAM, CPU usage, and storage space).

- **Security:** A consideration for all online programs is the security of the system. Knowing the level of security necessary requires the ministry to assess its own environment and the environments of the students. For participants to have a good experience, there must be a reasonable expectation that due diligence has been met with regard to user security. While eDOT acknowledges that total security is difficult to achieve, the ministry must strive to attain a reasonable level of security. Reasonable means that the LMS contains industry-standard measures to prevent attacks against it. Security will include the following components, whether the LMS is housed on-site or on a cloud-based server:
 - Updates to the operating system
 - Updates to LMS software
 - Hardware and software firewalls
 - Malware detection software with up-to-date definitions
 - Antivirus detection software with up-to-date definitions
- **Conclusions:** The considerations suggested here will help the ministry determine how and where to host the LMS. It is necessary for the ministry to balance each of these components as it makes the decision both about the LMS and how it will be hosted. Please do not sacrifice one component for the sake of another. For smaller ministries eDOT suggests cloud-based hosting solutions. These solutions can include LMS-specific support (especially in the case of Moodle) as well as

technical support and administration of both the server and the LMS, ensuring that the LMS is updated and secured and that service to it remains consistent for participants. This type of solution also allows for a great deal of flexibility to the ministry, so scalability should be easy to accomplish. A cloud-hosted solution allows ministry staff to focus on the development of learning that meets the educational needs of the ministry.

- **If the ministry builds a server on-site for the Learning Management System, what level of Internet access will be dedicated to that server?** The LMS located on servers on-site must have Internet access. Depending on the existing Internet access of the ministry, this need may require the installation of additional Internet service or separate, dedicated lines and the subsequent increase in Internet costs. Hosting an LMS in cloud-based servers would eliminate this additional cost, as that Internet access is part of the cloud-hosting service.
- **How will Learning Management System backups be addressed?** There is an old cartoon of Jesus and the Devil sitting at computers, working furiously. Suddenly, the power is cut, and the Devil is upset while Jesus appears calm. Why? Jesus saves! The simple question with regard to backups is: How much data loss is acceptable? Most likely the answer is “as little as possible.” Regular, scheduled backups will minimize data loss and make recovery efforts much easier.⁶ There will come a day when having a backup will make everyone’s life easier. eDOT has many stories of days that were saved by backups, and a few horror stories of nightmares caused by lack of backups. Any and every computer system, including an LMS and the host server, should have backup procedures. If the LMS is hosted on-site, there must be a system for backups that ideally includes daily backups with both local and off-site backup retention facilities. A cloud-hosted service for the LMS should include both redundancies to address the issue of backups as well as local and off-site backups.
- **Will the ministry employ an administrator or rely on web-hosting services for technical support?** Any solution needs to take into account both the institution’s instructional and developmental goals for students as well as student learning needs. It

⁶ eDOT has adopted a policy that we will attempt no data recovery on a computer that does not have a recent backup. The risks are simply too high for eDOT to take on the liability if an individual has not done regular backups.

would be advisable to poll students to determine the extent of interest in online learning. Answering this question also requires careful distinction between student needs and instructor wishes. Not every instructor will be suited to teaching online. At the heart of the question, though, is the issue of student needs: Will an online learning solution meet student needs, providing the educational experience that is necessary while also providing flexibility to the students?

Conclusions

The choice of a Learning Management System will directly affect educational goals and student accessibility and ease of access. There are many LMS choices available, and many of them are capable, reliable, and stable. eDOT does not have experience with all of these choices. eDOT has used the open-source LMS known as Moodle for many years and has proven it to be a robust, flexible, and capable LMS. Several partner ministries use Moodle, and it is available in many different languages. Moodle is an LMS that we recommend without hesitation of any kind. eDOT hosts several instances of Moodle through a cloud-based service that allows instant access to change the server settings based on needs. eDOT has found this solution to be the most flexible way to manage a Moodle server, freeing the system administrators to perform other ministry tasks.

There may be a strong rationale to build a server for the LMS on-site given the ministry's educational and environmental needs. The choice to host an LMS on-site will require additional decisions of the ministry, including having a solution to scale the server as required by student population and having dedicated personnel trained in both server and LMS maintenance. If these requirements are not already in place, it may be wise for the ministry to consider a cloud-hosted solution.

The selection of a Learning Management System and the infrastructure to house it will require investment of resources and effort and will impact the success of the online learning program. Taking the time to answer the questions presented here will give the ministry a firm foundation as the implementation project progresses. Every member of the ministry should be allowed the freedom to voice concerns and opinions about the selection of the LMS and its infrastructure.

Things We Did Not Say

Written communication only allows for one-way communication: from author to audience. In this section eDOT desires to clarify some common misunderstandings given what has been said above.

- eDOT does not desire to convey that a ministry should always only choose open-source software to meet ministry needs. There may be valid reasons for choosing a paid program over an open-source product. eDOT uses purchased products quite frequently as needs require. The point of the discussion about open-source software is to make it clear that *free* does not mean *worthless*. Many open-source software suites are quite robust and are major competitors to paid programs.
- eDOT does not intend to suggest that IT staff have no role in the selection process of an LMS. It sometimes occurs that because an LMS is considered “software,” the responsibility to select an LMS is left to the IT department. To give the task of LMS selection solely to the IT staff would be a mistake. Instructors, administrators, students, and IT staff need to be involved in this decision because each group will play a different, yet vital, role within the LMS. Involve the IT staff in the decision process, but do not leave the decision exclusively in the hands of IT staff.
- eDOT does not intend to suggest that cloud-based services are the solution for every computing problem a ministry may experience. Cloud-based services are widely available and have their place. These services generally offer reliable access to data from any location and maintain security and backup for the ministry. That does not mean that every single computing issue of a ministry should be solved with a cloud-based solution. Use such services as required by ministry needs as defined above. If there are good reasons not to use a cloud-based service, adopt that solution.
- eDOT has specifically avoided giving server specifications and server operating system guidelines for the simple reason that the specifications change over time and with the LMS vendors. A year or two from now, any server guidelines or recommendations that eDOT might provide would seem outdated and minimal. To avoid that, eDOT recommends that the ministry consult with the LMS vendor to determine the specifications for a server. The best solution will be determined by the ministry given the

environmental variables occurring in their ministry and given the resources that the ministry is able to allocate to the LMS.

- eDOT does not desire to convey that the ministry must have an on-site administrator to oversee an LMS. A ministry must examine all of the associated components of hosting an LMS, including having an on-site administrator. If the ministry already has an administrator who is knowledgeable and capable working with the LMS, so much the better. If an administrator is not available to the ministry, that reality may require the ministry to consider a cloud-based hosting service that includes administrator services.

Resources to Consider

With each article, eDOT will recommend some resources for a ministry to consider as it evaluates the issues leading to implementation of an online learning program. It is to be understood that these resources will provide fuller treatment and give greater explanation of these issues than is possible in these articles.

Boettcher, Judith V. *Countdown Guide for Planning Online/Distance Degrees*. 11 Oct. 2006. Web. 5 March 2013. <<http://www.designingforlearning.info/services/writing/count.htm>>.

Tagoras. *The 7 Step Process for Selecting a Learning Management System (LMS)*. Web. 26 August 2013. <<http://www.tagoras.com/wp-content/uploads/2013/05/Tagoras-7-Step-Process-Infographic-sm.pdf>>.

Thanekar, Pranjalee. *LMS Switching Guide*. Upside Learning. Web. 26 August 2013. <<http://www.upsidelearning.com/blog/index.php/2012/12/03/lms-switching-guide-a-free-ebook/>>. Although the primary audience of this guide is an organization switching from one LMS to another, the principles for selecting an LMS are valid for any organization or ministry. This resource is available for free after the registration process. Of specific interest is the chapter entitled “What Not to Do While Selecting an LMS.”

Weill, Peter and Jeanne W. Ross. *IT Savvy: What Top Executives Must Know to Go from Pain to Gain*. Boston: Harvard Business Press, 2009. Electronic file. This text explains for non-technical organizational leaders “information technology (IT) governance,” defined as the making of decisions about technology that impact its ability to adequately provide the solutions required of the technology infrastructure. In terms of online learning, this text is a valuable encouragement to make decisions about IT with a long-range future in mind rather than attempting to use IT to provide “stopgap, short-term” solutions to immediate problems. These authors have also written *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results* (Boston: Harvard Business Press, 2004), which is aimed specifically at IT organizations.