



LEARNING MANAGEMENT SYSTEM
FOR PATTEN UNIVERSITY:
BUSINESS NEED ANALYSIS

by

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Abstract

Patten University requested assistance in selecting software and/or service for a new e-learning program. This paper presents an overview of the proposed process for selecting a Learning Management System (LMS), then completes an initial review of related business requirements. These requirements include discussions of business need; return on investment; identification of target groups, possible quick successes, and stakeholders and their expectations; functional and non-functional requirements; key user roles; and technical requirements. The paper closes with a discussion of several related issues that need resolution, including LMS management decisions, identification of project team, and development of a plan for phasing in various components of the LMS.

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Introduction

In December 2002, Frank Markow requested assistance in selecting software to support a potential distance education program for the Church of God Western Theological Seminary, which is a cooperative within Patten University. Patten has several extension sites in the western U.S. and overseas; however, this will be Patten's first attempt to deliver courses via the Internet.

The first part of this report outlines a vendor selection process. The second section summarizes critical business requirements. Future papers will address additional vendor qualification issues, summarize purchase options in context with Patten's current capabilities, and recommend additional steps to complete the selection process.

Overview of the Vendor Selection Process

The following checklist for selecting a Learning Management System (LMS) is modified after Zieberg (2001, p. 3), with additions from DeRossi (2002, n.p.) and Rosenberg (2002, pp. 274-277).

1. Determine LMS business requirements (Zieberg, 2001, p. 3).
2. Develop a qualifying checklist (DeRossi, 2002, n.p.; Rosenberg, 2002, pp. 276-277).
3. Research LMS vendors. (DeRossi, 2002, n.p.; Rosenberg, 2002, p. 274; Zieberg, 2001, p. 3).
4. Narrow down potential vendors for consideration (Zieberg, 2001, p. 3).
5. Conduct vendor demonstrations (Rosenberg, 2002, pp. 275; Zeiberg, 2001, p. 3).
6. Further narrow the list of potential vendors.
7. Conduct an LMS Needs Assessment (Zieberg, 2001, p. 3).
8. Road test solutions (Rosenberg, 2002, p. 276-277).

9. If necessary, develop and distribute an RFP (Zieberg, 2001, p. 3). [Rosenberg (2002, p. 277) recommends that you do your utmost to avoid issuing an RFP and, instead, find one or a few vendors who meet your needs and develop a long-term relationship with them.]
10. Prepare your company for change (Zieberg, 2001, p. 3).
11. If an RFP is issued, (a) evaluate proposals and short list vendors, and (b) conduct final vendor presentations and select a vendor (Zieberg, 2001, p. 3).
12. Negotiate the LMS contract and prepare for implementation (Zieberg, 2001, p. 3).

LMS Business Requirements

Rosenberg (2002, p. 274) noted that one of the keys to finding good vendors is to know "what you are looking for" because firms (or products) good at one task may not be good at another. While the task of selecting a suitable LMS at first may seem simple, it potentially involves several administrative processes and support units. For example, students in the distance learning program will require at least as much support by accounting, admission, registrar, and advising staff as do on campus students, and potentially greater IT support. Faculty may require specialized training and greater IT support, although these costs may be minimized by selecting a LMS that is easy to use.

Zieberg (2001, pp. 4-8) indicated that business requirements can be defined by gathering several types of information, including data on (a) business need, (b) measures of success, (c) potential return on investment, (d) target groups, (e) initial pilot groups that may yield quick successes, (f) stakeholders and their expectations, (g) functional and non-functional requirements, (h) key user roles and their functional requirements, (i) technical requirements, (j) LMS management decisions, (k) project phases, and (l) partners in the project.

Business Need

Several business needs are critical, while others will help minimize current or avoid future costs. Also, note that as the numbers of distance-learning students increase, so potential savings will increase.

Provide a system for:

1. Delivering content to distant students [critical]
2. Collecting completed assignments [critical]
3. Advising students about performance [critical]
4. Streamlining administration [cost avoidance]
5. Improving customer service [cost avoidance]
6. Developing of and queuing for standardized content, while providing instructors with opportunities to tailor content to take advantage of unique learning opportunities [critical and cost avoidance]
7. Providing self-service learning for employees and third-party vendors [cost avoidance]
8. Deploying learning resources and training programs quickly [critical]
9. Extending, maintaining, and enhancing communities [critical]

Several of the above items deserve elaboration.

The third need is commonly satisfied by giving online students password-protected access to the course gradebook. Kate Emmons (personal communication, January 2003) stated that uses different LMSs to teach at two different universities. She noted that giving students access to her gradebook lessens her workload, and lamented the fact that the LMS of one of the universities does not support that access.

Regarding the fourth need, a case study of Marshall University illustrated the potential for savings. In 2001, Marshall was using three different platforms—SCT Banner (for administration), WebCT (LMS), and a separate e-mail system. Christian and others (2002, n.p.)

estimated that it took 200 hours to manually create 8,000 user accounts and track 400 online courses in each of the three systems. Users also had to log in to each system separately. Complaints were on the rise, but due to the workload, staff had very limited time to assist users. Marshall decided to integrate the three platforms, a process that took 12 months. After integration, it only took about 10 hours (for 550 courses) instead of 200 hours to handle those set-up tasks.

Marshall's integration also led to greater interest in online courses among students and faculty. In September 2002, some 13,000 students were enrolled in 760 online courses. When asked what the greatest future issue with this integrated system will be, Christian and others (2002) replied, "From a technical standpoint, future upgrades can be tricky. We're no longer upgrading just WebCT or Banner, but a whole system. As enhancements in each component occur, the underlying architecture has to change with them."

Any examination of the fifth need should consider Patten's growth potential. Any existing inefficiencies and service problems are likely to increase as the numbers of campuses and online students increase. Inclusion of knowledge management components can provide a means for new faculty and staff (even in remote locations) to quickly and efficiently acquire knowledge about processes, policies, and procedures, obtain training, and collaborate to develop future best practices. An integrated LMS can point students to specific knowledge management resources based on their individual needs (Rosenberg, 2002, p. 163).

The sixth need includes functions typically found in an Integrated Learning System—authoring tools, content management, and knowledge management. The latter may be key in streamlining in-house training of new staff and in assuring consistent application of policies and procedures as the university adds campuses.

The ninth need—*extending, maintaining, and enhancing communities*—refers to the need to extend the learning community to existing and new geographical areas, and to maintain and enhance those community links. For example, Patten's neighbors are largely unaware of campus activities unless they happen to see a flyer or poster on campus. If the LMS has a public web component, those notices could reach a wider audience and potentially improve community relations. Any LMS ideally also would provide a means for alumni to maintain contact with Patten and, perhaps, partake in post-graduate learning opportunities.¹ These sorts of community connections may help increase or sustain contributions to endowment and scholarship funds.

Measures of Success

While the technological platform is a critical part in the design of a web-based education program, success involves much more. Rosenberg (2002, p. xvi) says,

The question is no longer whether organizations will implement online learning, but whether they will do it well.... An effective e-learning strategy must be more than the technology itself or the content that it carries. It must also focus on critical success factors that include building a learning culture, marshaling true leadership support, deploying a nurturing business model, and sustaining change throughout the organization.

Some obvious measures of success are satisfaction of students, instructors, and administrative staff who use or provide technical support for the LMS. One way to measure success is to develop satisfaction surveys that ask users for their overall impressions and

¹ For example, Fuller Seminary's Sacramento Extension permits students to audit two courses per year, free of charge. This not only helps alumni identify with and continue to value the seminary, but it also provides current students with access to personal accounts of post-graduate experiences, needs, and issues that can aid their learning experiences.

suggested improvements. Other measures may include: (a) the number of students who register for online courses, (b) the number of faculty who make use of parts or all the system to support campus-based learning, and (c) the number of times that specific parts of the system (e.g., financial accounts, grades/transcripts) are viewed by students without staff assistance.

Return on Investment

Return on Investment (ROI) compares system cost with revenue generated and any savings that may derive from streamlining or simplification of current operations.

Target Groups

To some extent, Frank Markow (personal communication, January 2003) has already defined the target audience—students that cannot, for various reasons, attend campus-based classes on a full-time or part-time basis. Many Church of God (COG) pastors are bi-vocational and cannot leave their churches and jobs for an extended period. Spread throughout the western U.S., it often would be impractical to establish local extensions to serve many of them because of a lack of critical mass (immediate and long-term) and qualified instructors. Other students may choose to enroll in distance programs either to minimize costs or take advantage of a system that matches their own style of learning.

While Markow assumed that enrollees would have the basic computer skills and equipment needed to successfully complete the online degree program, that isn't necessarily the case. For example, in December 2002, one or two students who lacked basic computer skills enrolled in a PhD Education program at Capella University (where all coursework is completed in an e-learning mode). Some pastors have very limited computing experience and rely heavily on their secretaries for basic word-processing and e-mail service. Richard McElrath (personal

communication, January 2003) noted that there have been instances where advisors at the college where he teaches have enrolled students in online classes even though the students did not have a computer.

Initial Pilot Groups That May Yield Quick Successes

Initially Patten plans to offer a 2-year degree-completion program, meaning that enrollees will have already completed two years of general education courses, for COG pastors (Frank Markow, personal communication, 2003). A second initial target group consists of about 300 foreign students who cannot gain entry to the U.S. (Gary Moncher, personal communication, 2003). Both groups, however, potentially include students who may not be proficient writers, either because they took English composition many years ago or because English is their second language. For this reason, each student should probably be required to submit a writing sample for evaluation prior to admission or during an introductory course. Ideally, the any selected LMS would be able to automatically evaluate such writing examples.

Stakeholders and Their Expectations

There are four basic types of stakeholders:

1. Primary users of the system: students, faculty, system managers, and, if the selected LMS supports general administrative functions, administrative staff. These individuals will primarily be interested in ease of use, functionality, readability, and other use-related aspects.
2. Managers who are interested in benefit-cost, ROI, and overall strategic benefits.
3. Funding entities, such as the COG, who are interested in enhanced learning capabilities, pastoral community support, and delivery of specific content.
4. If the system includes public web components, the near-campus community, which may be interested in event calendars and/or services that are currently largely inaccessible.

Functional and Non-Functional Requirements

Zieberg (2001, p. 6) listed the following functional requirements:

1. Content and curriculum management
2. Registration
3. Class scheduling
4. Course delivery
5. Competency management
6. Assessment, testing, and evaluation
7. Compliance, certification, and accreditation
8. Resource management
9. Inventory management
10. Finance administration
11. Content authoring
12. Content management
13. System administration
14. Reporting
15. Ability to define user roles within the LMS
16. Ability to define user profiles
17. Ability to set up learning home pages

Note that some of the above items may overlap or be modularized. For example, testing and assessment modules (which include test delivery, answer gathering, automated and/or manual grading, item assessment within the tests) may be linked to gradebook functions and electronic reporting of final grades to the university's registrar.

Also note that item 17—*ability to set up learning home pages*—includes learner-centric personalization, a feature that allows the LMS to identify a student by his or her profile and

deliver targeted content (courses, news, references, and other information) to continually engage the student in the learning experience (ElementK, 2001, n.p.).

Zieberg (2001, p. 6) listed the following non-functional requirements:

1. Performance requirements [e.g., 24/7 operation, minimal downtime, routine backups]
2. User interface considerations
3. Business domains
4. Global access and functionality
5. Application and database management
6. User and system documentation and training
7. Security and audit functions
8. Flexibility and scalability

Key User Roles and Their Functional Requirements

The administrator of the LMS should be able to delegate roles to individuals while maintaining security and assuring data integrity. This ability to assign various rights (e.g., to develop, alter, or delete content; access personal data) will allow various users to maintain the learning environment. The basic roles have been outlined by Zieberg (2001, pp. 6-7), although individuals may have more than one role within the system:

1. Catalog Administrator
2. Course Scheduler
3. Registrar
4. Systems Administrator
5. Finance Administrator
6. Instructor or Facilitator
7. Competency Specialist

8. Accreditation and Certification Administrator
9. Inventory and Distribution Specialist
10. Learner
11. Manager, Coach, or Mentor
12. Instructional Designer
13. Content Author
14. Content Manager

Technical Requirements

Per Zieberg (2002, p. 7), technical requirements typically include scalability; networking, hardware, software and operating systems that the LMS requires or must support; ability to support plug-ins, applets, or additional software on client workstations; interoperability and integration needs (e.g., ability to interface with existing administrative software); compliance with SCORM (Shareable Courseware Object Reference Model), IMS (Instructional Management System Global Learning Consortium) or other technical standards; MAPI, OLE, TCP/IP, and ODBC functionality; and security standards for local and remote use (Zieberg, 2001).

Patten's information technology (IT) staff should be able to research technical requirements needed for interoperability and interfacing with existing systems, if some or all of them need to be retained. IT staff also will be key in estimating costs associated with any additional hardware, software, or support system requirements, and conversion of existing administrative data. The university should also consider compatibility issues related to any commercially available courseware that it might want to purchase. In the event that the university considers acquiring an entry-level LMS, intending later to shift to a more robust system, potential courseware conversion problems and costs should be analyzed.

LMS Management Decisions

There are two key decisions that need to be made regarding the management of the LMS.

They are:

1. Who will manage the LMS, and will it be solely managed by one unit (e.g., information technology), jointly managed, or remotely managed (e.g., by an outside vendor)?
2. If the LMS is to be managed by a vendor, who will be the university's primary representative—the individual who will provide work direction to the vendor and is authorized to negotiate and help resolve problems, etc?

Project Phases

Zieberg (2001, p. 8) recommends phased implementation for users and functionality, especially if the organization is new to e-learning (as is Patten). Phased implementation would allow various users to gradually become accustomed to the functionality that the system provides. Obviously the phasing may depend on which LMS is purchased and what components are included. If, for example, financial management components are not purchased, there is no need to train financial staff to use those components (although there may be a need to train information technology staff to transfer data between the LMS and other administrative software used by the university). Also, it may be necessary to continue operation of some existing systems (e.g., accounting) during conversion and a reasonable *shake-down* period. Planning of the phasing will help prioritize immediate needs and allow time for customization, troubleshooting, and adequate training.

Partners in the Project

Patten does not yet have a team assigned to review vendors and implementation options. Given the potential for far-reaching impacts on university operations, the team should have one

or more members to represent key stakeholders of the university's business, information technology, and distance-education units, plus the project sponsor and any key implementation partners (e.g., trainers).

Conclusions and Recommendations

Defining business requirements in detail can take a few weeks to a few months. The university needs to do it right, because it will pay off in the long term. A partial analysis may waste money, necessitate duplication of efforts, cause disrupted operations, and adversely affect the learning environment.

Admittedly, this initial effort to summarize business needs is incomplete. However, given that development, support, and operation of any LMS (a) will require a team effort, (b) will impact several parts of the existing operation (including IT and administration units), (c) could benefit campus-based learning experiences, and (d) could aid in building, maintaining, expanding the scope of, and enhancing the Patten learning community, many of these decisions merit team consideration and input. This early partnership also will help foster a sense of collective ownership, promote collaboration, and expedite implementation and future problem solving, which will, in turn, help seed the community-building efforts and promote improved learning.

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