Implementing eLearning Combined with a Learning Management System in the Hospital Setting

By

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Part Three of a Four-Part Series on eLearning

Abstract

The use of eLearning has increased dramatically over the last decade. Despite this rapid growth, eLearning in the hospital setting, particularly eLearning combined with a Learning Management System, is much less prevalent than in other industry settings. Hospitals face many unique challenges such as rolling out to an audience that may be resistant to additional technological change, addressing limited access to computers, meeting the needs of a 24/7 audience, and protecting learning time so staff can be away from activities on their unit.

In 2006, University Health Network (UHN) met these challenges and successfully implemented eLearning in three acute care hospitals. This article serves as a guide for hospitals planning to implement eLearning with a Learning Management System. It will discuss structures and processes required, rollout and support strategies and other guidelines to ensure a successful transition to an eLearning environment.
Introduction

In the Spring of 2005, University Health Network, (UHN) embarked on a journey to bring learning and education to front-line clinical staff. Despite the challenges, we knew that a successful implementation would provide immense opportunity for our staff and resolve internal inefficiencies. The structures and processes that we defined along the way helped us successfully implement a Learning Management System, develop over 40 eLearning courses, and change the way our organization approached learning.

Once we had purchased our Learning Management System (see article #2) we were faced with several key questions:

- What data do we need to store in our Learning Management System?
- What processes do we need to define before we make this system accessible?
- Where do we get courses?
- How will we roll out to over 10,000 staff located in three different hospitals?

Our implementation plan unfolded in four distinct phases:

- Configuring our Learning Management System
- Start Up Activities
- Developing Courses
- Roll Out

Each phase is discussed below and includes lessons learned along the way.

Phase 1: Configuring our Learning Management System

The configuration of our Learning Management System (LMS) was made easier by our decision to choose a hosted solution provided by a vendor whose healthcare experience guided us through the configuration process. The vendor provided us with valuable information about the fields other hospitals added to their tables, custom reports they required, and different security profiles they used. A hosted solution also meant we did not need in-house expertise or specialized equipment to install the system. With much of our work eliminated by virtue of selecting a hosted solution, our configuration activities were limited to our arriving at solutions to address the following questions:

- **How will we uniquely identify each employee?** We used employee identification numbers because they were used as the unique identifier in our Human Resources Information System (HRIS)

- **What type of data will we track about each person, course and registration?** We included data such as name, department and job type but avoided personal
data such as salary and home address. All data, with the exception of email addresses, is uploaded from our HRIS system.

- **What course coding schema will we use?** The course coding schema uniquely identifies each course. It also controls how we can query groups of courses. Ours included information about target audience, course owner, delivery site and course type. This means we are able to filter course data by audience, course owners, site, and by course type, such as face-to-face courses or web-based courses.

- **How frequently will we update our LMS employee data from our HRIS system?** We update our data weekly with an automated process.

**Lessons Learned**

Our experience using a hosted solution has been very positive. It reduced the number of decisions that we made at the outset and allowed us to progress without requiring in-house expertise or technical infrastructure. Combined, these benefits allowed us to implement our system in less than three months. The decision to use a vendor with healthcare expertise was also beneficial. However, in retrospect, we might have been able to achieve the same results by inviting another hospital with LMS experience to participate in our configuration.

**Phase 2: Start up Activities**

Before launching the eLearning system, we set the stage for our roll out by proactively addressing a number of issues. These issues included managing stakeholder expectations, addressing our limited access to computers, increasing the number of staff who had access to email, defining internal processes and laying the stage for our Help Desk to support the system.

**Managing Expectations**

When we announced our eLearning initiative to our nursing community, the initial reaction from our nursing leaders and educators was an overwhelming sense of excitement. They were thrilled that we had purchased a system that would reduce the amount of repetitive, didactic, face-to-face training, automate tracking, and simplify reporting. Educators couldn’t wait to put every in-service and PowerPoint presentation they had online. Our challenge was to set realistic expectations. It was important for us to clearly communicate how we would use the system, clarify the types of courses that were appropriate for eLearning, define realistic processes and timelines for course development, and provide guidelines that outlined appropriate educational activities to track in our LMS. We accomplished this by establishing clear guidelines, circulating them to key stakeholders and making them available on our eLearning website. We also
presented information sessions at nursing leadership and clinical educator meetings and promoted our vision for the system in our online and paper-based hospital newsletters.

**Providing Access to eLearning**

Our next crucial task was to identify how staff would access eLearning. We conducted an inventory of computers in clinical and common areas throughout the hospital to ensure we had an accurate understanding of where each computer was located. While the results revealed that most nursing areas had a shortage of computers at the nursing station, many had a separate area with a computer in a quiet room or in a unit specific education area. We also identified key areas throughout the hospital that provided general access to computers including nursing resource centres at each site and computer rooms in the libraries.

Another form of access was related to eLearning itself. Our system is completely web-based and is accessible 24-hours-a-day, 7-days-a-week. We wanted to make sure eLearning could be accessed within the hospital but also from home or from other internet connections outside the hospital. To meet this objective we set up two key locations where staff could launch eLearning: our Corporate Intranet, which is familiar to staff and easy to access within the hospital, and a direct link on our external site, which allows users to log in to eLearning without logging in to our hospital’s network.

**Providing access to email**

Email is integral to our eLearning system and is required to:

- confirm a registration or a change to an instructor-led class
- send reminders when a certification is about to expire
- reset a forgotten password

Despite its importance, many nurses and, in some cases, entire units, did not have email accounts. Ensuring our staff had access to email was essential. Achieving this quickly was a challenge for our IT department. We approached this by negotiating smaller email accounts for our nurses (10 MB vs. 50 MB) in exchange for a higher number of accounts. We also engaged our Computer User Support Program (CUSP) team to provide end-user education. This group was in the midst of rolling out other computer training, unit-by-unit throughout the organization. With a bit of convincing we were able to complete email training at the same time. This method proved quite successful and we were able to provide an email account to over 70% of the staff. The remaining accounts were created in a second sweep of the units, when we rolled out eLearning.

Despite our overall success with creating email accounts, we encountered two other significant issues along the way.

- Most nurses use roaming accounts to access web-based email as opposed to an email account associated with a specific machine (1 user, 1 machine). These web-
based accounts expire after three months and require the user to log in to a local machine in order to reset their account. Most nurses were unfamiliar with this requirement and the procedure to correct it. We are working on implementing a solution that will resolve this problem.

- Our HR system does not contain email addresses. This means that none of the data imported from our HRIS system to our LMS contains email information. Our IT team created a work around that copies data from the global address list. Unfortunately this method only captures 85 to 90% of staff email accounts. The rest need to be added manually.

**Defining Internal Processes**

Defining our course coding schema and developing a process for requesting the development of an eLearning course were important processes that required our immediate attention.

**Course Coding Schema**

Every course requires a unique code to enable us to identify, perform searches and generate reports. It was essential that the coding schema we developed was reliable, well thought out and anticipated our future needs.

Our schema had to meet the needs not only of nursing but also of other departments within our organization and hospitals within our consortium. Our LMS limits course codes to a maximum length of 10 characters and because we share the system with other hospitals, 2 characters were reserved to uniquely identify each hospital. We approached the task of defining our schema by soliciting input from more than a dozen departments including human resources, library services, clinical areas, labs, the information technology training departments and others. The group compiled a list of their existing and future courses and from this list we identified course categories, the types of searches we would perform and the types of reports we required.

Our current schema, shown on next page, evolved from this exercise.
Identifying Courses to Develop

Our first step in deciding which courses to develop was to identify broad reaching courses that were aligned to our Corporate nursing priorities and that would reduce the current workload of our clinical educators.

Further to that, we invited clinical educators to identify additional courses using a web-based request form on which they were asked to include course information such as a course description, its duration, the number of participants it would reach and how it met our identified priorities. They also identified the subject matter experts, their availability and a timeline for content development.

Once we had a number of course requests, we established a Nursing eLearning Committee that consisted of Corporate and Clinical Educators from each of our sites. This group reviewed the submissions and decided what courses would be developed. The committee considered factors such as whether the course aligned with our priorities, the team’s timeline, and the impact the course would have, against the time required to write the content and the cost of developing the course.

Using this approach we developed a set of courses that targeted new hires, best practice guidelines, and topics that currently consumed a significant amount of our Clinical Educator’s time. Examples of courses developed include:

- Vascular Access
- Pain Management
- Skin Breakdown
- Chest Tube Care, Maintenance and Removal

As we gained experience, we opened the LMS to include courses that expanded beyond Nursing such as Fire Safety and Privacy. The Nursing eLearning Committee evolved as well, broadening into a hospital-wide interdisciplinary committee. The role of this committee is to monitor new courses under development to ensure the content is
inter-professional in scope, where appropriate, and to ensure courses adhere to the
eLearning standards that we have adopted.

**Engaging our Help Desk**

Our third start up activity was to ensure that we had adequate end user support.
Although the system’s servers and databases are fully supported by our vendors, we also
required a mechanism to resolve day-to-day issues such as log in problems and questions
about how to use the system. Our solution was to engage our Help Desk to provide end
user support. The Help Desk has web-based access to our system that allows them to
view staff accounts, access log in information, reset passwords, and use a list of
frequently asked questions to troubleshoot common problems.

**Lessons Learned**

**Communication** – Communication was key to managing our stakeholders’ expectations.
We were very proactive in communicating information during our initial roll out and this
built a strong level of excitement and understanding about how we would use the system.
However, as time passed we communicated with these groups less often and the initial
enthusiasm declined. Our lesson learned is that it is important to continue to
communicate with your stakeholders on a regular basis. Periodic updates build
excitement and provide a forum for providing new information about courses and the
system.

**Access to computers** – We assumed that poor access to computers would prevent staff
from completing eLearning courses and, while access is certainly something we could
improve, it has not prevented staff from using our system.

Although access to computers continues to be an issue in some locations, our recent
survey results show that over 78% of 1400 respondents either agreed or strongly agreed
that, “It was easy for me to find a computer so I could complete this course.” Our lesson
learned is to test perceived issues before assuming they will be a problem.

**Email accounts** – The use of email is a key communication component of most LMS
systems. Our lesson learned is that we should have created email accounts and
encouraged staff to use email from the moment we knew we were going to purchase a
LMS. Doing so would have provided staff with an increased level of comfort when it
came time to use email to check for eLearning and LMS related communication.

**Course Coding Schema** - While our final course coding schema has proven to be very
robust we did make some mistakes along the way. During our first attempt, we compiled
a list of nursing courses and naively assumed that it was well rounded enough to take into
account the needs of the entire hospital. When creating a coding schema, be sure to
include examples from all areas of your organization. The second mistake we made was
to not fully understand how searches were performed in the system. For example, our
eLearning system provides users with the choice of searching for online courses,
instructor led courses and other types of courses. It wasn’t until we actually implemented the system that we discovered that our system couldn’t distinguish between delivery types unless we included it as a component of the course code. Thankfully our initial schema only used 9 characters so we just added a 10th character to the code to account for delivery method. It was a mistake that was easy to fix, but also meant that we had to manually recode about 60 courses.

**Phase 3: Developing Courses**

After determining our course topics, we considered several options for developing our courses:

- Purchase third-party courses
- Develop courses in-house
- Use an external vendor
- Collaboratively build courses with other hospitals

After investigating each option, we decided to develop our first few courses using an outside vendor simply because we did not have the right technical experience in-house, nor did our collaborative partners. Our review of third party courses identified several interesting programs but they were either developed in the United States, and used an Imperial unit of measurement, or the courses were not SCORM compliant, a prerequisite for tracking course completion in our LMS. Although using a vendor proved to be quite expensive, it did have two key benefits. First, it allowed us to use our internal content experts and, secondly, it provided our educators with an opportunity to experience the course development process without the pressure of completing the development on their own.

**The Development Process**

Course development was a joint effort between our hospital’s course team and the vendor’s development team. Our course team consisted of a group of subject matter experts (SME) led by an educator. The course development process worked as followed:

1. The course team developed the course objectives.
2. The course team wrote content for each objective.
3. Their stakeholders vetted the content and once the content was approved, passed it on to the vendor for instructional design and development.
4. The vendor developed the first draft of the storyboard.
5. Using an iterative process, the vendors worked with our SME team to fine-tune the storyboard until everyone was satisfied.
6. The vendor developed the multi media version of the material

Using this approach, we developed seven courses. The process proved to be very educational for our SMEs and course team leads. Since then we have taken the information we have learned and used a simple authoring tool to develop our own courses
in-house. We will continue to periodically outsource course development but now we are very confident in our ability to develop courses ourselves.

Lessons Learned

Timelines – One lesson that we have learned is how important it is to establish and stick to realistic timelines and time commitments. Our experience shows it take can take between 150 to 300 hours to develop 30 minutes of online learning.

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Duration (minutes)</th>
<th>SME time (hours)</th>
<th>Development time (hours)</th>
<th>Total Time (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Management</td>
<td>60</td>
<td>128</td>
<td>175</td>
<td>303</td>
</tr>
<tr>
<td>Vascular Access</td>
<td>45</td>
<td>206</td>
<td>200</td>
<td>406</td>
</tr>
<tr>
<td>Focus Charting</td>
<td>15</td>
<td>71</td>
<td>75</td>
<td>146</td>
</tr>
</tbody>
</table>

Key events that can take up time include meetings among the course development team, review and testing of a completed course, development of animations, or obtaining copyright clearance for photos or videos.

SME input - From a course development perspective our most important lesson was to ensure the content is completely written and ready before course development starts. With some of our first few courses we decided to change the objectives mid-way through the development cycle. This essentially meant we were starting over and had to discard some of the expensive media work already in progress. Our next important lesson was to keep the development team small. We recommend keeping your course teams as small as possible. Large teams slow down the decision making process. You can always involve others at select stages before the content is approved but keep a small team for the bulk of the work.

Costs – Development costs vary depending on whether an outside vendor is used and how much media you require. A course with lots of video, custom illustrations or animation is much more expensive to build than a text and image based course. For example, a simple text and image based course that we developed ourselves cost approximately $77.00 per minute of eLearning. One of our more media rich courses that we developed using an outside vendor cost several hundred of dollars more for every minute of eLearning.

Education – While using an outside vendor proved to be more expensive than we had anticipated, it provided an intense and immersive education opportunity for those that participated in the process. This experience was invaluable and there is probably no other method that would have provided us with the skill, experience and confidence that we can now bring to our course development process.
Phase 4: Rollout

Our final implementation phase was rolling out eLearning to our Nursing staff. The primary goal of our roll out was to find a simple way of introducing our staff to our eLearning system. We approached this task by posing several questions:

- What course do we start with?
- Who do we target, a small group or a large group?
- How long should the first course be?
- Who will support our roll out?

We decided to start with a short, policy review course. Staff were required to log in to the system, launch the course, read the associated policy and then confirm they had read and understood the content. We selected this course because it was short, was required by all nursing staff, and needed to be tracked as an accreditation requirement. Selecting a simple course to start was ideal because it did not require any custom media or technology to run or to build and could easily be built in-house.

Our final question, “Who will support our roll out?”, posed another set of challenges. We are a 3-site hospital with a total of 2500 nurses. How do we reach them all? Our initial, and somewhat naïve, approach was that we would show our educators how to log in and complete the course, equip them with paper-based job aids to place near the computers, and ask them to explain to their staff how to log in and complete the course. We piloted this approach in 2 units in one of our hospitals and, even though our eLearning system is very simple to use, our approach did not work. Staff didn’t understand how to find their log in information, some were reluctant to try the new technology without hands-on guidance, something educators didn’t have time to do, and some staff ran in to unexpected technical issues. We regrouped and came up with a new approach that we used to roll out eLearning across all our sites.

Our revised approach was to offer one-on-one and small group teaching to all nursing staff on every unit in all three hospitals. We accomplished this by seconding two full-time nursing Clinical Support Analysts to fill this role. Using a phased approach the support analysts scheduled several visits to all the units, hospital by hospital so they could reach all staff. They also scheduled several night sessions to ensure they could reach staff that worked permanent nights. Support analysts helped staff to log in, showed them how to use the system and guided them through the completion of their first course. The support analysts provided nurses with a level of comfort that we were unable to achieve with our original plan. Using this approach, we completed our rollout within ten months.

Lessons Learned

Use a hands-on approach – In our experience we found that it was very important to offer some form of hands-on training when nurses were learning how to use the
system. We were fortunate to be able to secure two full time staff members to assist with this, but other alternatives might be to hold lunch-and-learn sessions or face-to-face classes.

Start with something simple – We found it helpful to roll out the system by asking staff to complete a short, simple course. This ensured that most staff were successful and allowed them to complete their first learning experience, including learning how to log in for the first time, in under ten minutes.

Develop a suite of courses before you start - While we found it very beneficial to start with a single small course, one lesson we learned was that it is very important to have a several courses available for staff once they have learned how to use the system. We taught staff how to log in and complete a simple course and but didn’t have anything else for them to complete for several months after their initial log in.

Conclusion

The development of an eLearning platform for the delivery of employee education has been instrumental in transforming education at our institution. In the two years since the introduction of eLearning, learners, managers and other stakeholders have witnessed improved access to data, reports and learning opportunities for staff.

Our experience provided us with some very positive learning experiences as well as several things we’d do differently if we were to do it again.

The use of this innovative approach has been instrumental in moving education out of the classroom and into the daily lives of our nursing staff. Educators from across the organization have been key to the successful implementation of this solution. Immediate successes include the ability to meet increasing educational needs of staff, capitalize on the limited availability of educators, promote learner responsibility for learning, facilitate the tracking of educational initiatives, and assist the hospital to meet government, professional and local mandatory educational requirements. Evaluating the overall success of eLearning will be the subject of the final article in this series.

Bibliography


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