Implementing Online Learning: Use of a ‘Shared Service’ Model by District Health Boards to Acquire Online Learning Courseware

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Abstract

This paper describes the implementation of a cost-effective online learning programme and a locally developed, informal ‘shared service’ business support solution for the benefit of District Health Boards. The discussion includes how the benefits of economies of scale and expertise-sharing can be leveraged to ‘improve value’ as described in the 2009 Ministerial Review Group Report: Meeting the Challenge. It explains how the shared service solution can assist participating DHB’s to rapidly acquire training courseware to populate their MOODLE learning management systems.

1. Introduction

This paper describes the implementation of online learning by the Auckland District Health Board (ADHB) and explains how an informal ‘shared service’ regional collaboration approach has been developed to assist other DHB’s to acquire online learning courseware.

Online learning is a generic term to describe structured learning events that are accessible via a web-browser. At this organisation it includes eLearning (i.e., tutorial content) and eAssessment courseware (i.e., compliance testing). MOODLE (Modular Object Oriented Dynamic Learning System) is a browser-based application that offers a secure, virtual learning environment for online learning. There are no licensing fees because it is ‘Open Source’ (http://opensource.org/docs/osd). MOODLE is used for authoring course content and managing participant learning activities. Key functionalities include user validation, course securities, communication tools, courseware design tools, activity tracking logs and achievement records (http://moodle.org).

On 16 August 2009 Health Minister Tony Ryall released the report of the Ministerial Review Group (i.e., Meeting the Challenge: Enhancing Sustainability and the Consumer Experience within the Current Legislative Framework for Health and Disability Services in New Zealand) [1]. It recommends how value can be improved in the New Zealand public health and disability sector [2]. For example,

“... reducing the cost of ‘back office’ shared services for DHB’s and reducing the duplication of functions carried out...”(p4), and

“Putting the right services in the right place by ensuring that the sector is configured nationally, regionally, and locally...”(p4).

The innovation described in this paper exemplifies the ‘improved value’ referred to in the report. For example, in the context of online learning course development, DHB course sharing can produce significant benefits. A DHB-wide online service with an inventory of shareable courseware could leverage economies of scale, increase professional networking opportunities, reduce variation and help distribute knowledge and expertise across the sector. Also, there is a risk that without collaboration or networking, two DHB’s could develop similar learning packages for their respective audiences. This duplication is wastage of ministry dollar funding - and key resource time.

The discussion will elaborate on the ADHB implementation of online learning and the subsequent development of an informal ‘shared services’ business solution that supports other participating DHB’s to fast-track their acquisition of courseware.
2. Organisational Context

The ADHB is a large healthcare organisation. The total FTE is approximately 7,500, total staff by headcount is over 8,000 – and nursing is the largest workforce component with 3,100 FTE [3]. This large workforce is also dispersed geographically and temporally, posing significant training challenges. Online learning is a key way to address these and the extent to which this electronic teaching medium is used provides some measure of its success. For example, in May 2010 more than 5,700 participants were registered users, approximately 100 courses were available and daily logins for a business week ranged between approximately 100 and 260 – an average of 130.

An extensive literature reports that returns on financial investment in learning technologies pay off with efficiency gains, increased content reuse and lowered development and delivery costs [4,5,6,7,8,9,10,11]. For example, investments in online learning have reduced this organisation’s dependency on certain training providers (i.e., internal FTE’s or external providers), accelerated workforce learning (staff can complete training and assessment without delay) and increased worker understanding (evidenced by knowledge assessment and achievement records). Workers train (and retrain) at their own pace, have 24/7 accessibility to training, and enjoy ‘just-in-time’ learning (training when required). Other operational benefits include efficient competency and/or compliance management via machine-marked tests and uniform content dissemination so everyone gets the same training message. Many nursing staff can learn without necessarily leaving their work areas (reduced opportunity costs), course updates involve minimal delays, and costly training venues are largely unnecessary. Deploying learning online allows remote workers (community-based), ‘back-fill’ workers (Bureau nurses), returning nurses, or new grads to up-skill with minimal human training resource support.

3. Discussion

3.1. Pilot Implementation

The ADHB was an early adopter (amongst DHB’s) of online learning technology in 2004. At that time an online assessment application for testing and examinations was successfully introduced. But, this attracted ongoing licensing fees. The decision to pilot the MOODLE learning and content management application was made in June 2007. This was based on claims of cost-effectiveness and sound pedagogical functionality benefits [12,13,14]. The pilot programme involved 140 nursing staff and successfully demonstrated that MOODLE was fit for purpose [15].

3.2. Business Implementation

A two-year trial period was introduced to troubleshoot issues, complete system customisations, collect further information about the implementation and train educators in instructional design best practice and web authoring. The trial was completed in 2009 and its outcomes demonstrated that the deployment of MOODLE provided the organisation with a useful, cost-effective and efficient training solution. Combined with the service hosting costs (cited earlier), the operational resourcing and course-development could be annualised at approximately $11 per worker in 2009.

Implementation of the online learning programme focused on several key aspects.

3.2.1. Management Resourcing

Project implementation support at a senior level was provided by the organisation CIO, Executive Director (Nursing) and the Learning and Development manager. Operational resourcing was achieved by appointing an FTE with appropriate degree qualifications, extensive teaching experience and a skill-set that included instructional design expertise, an understanding of HTML, and project management proficiency.

3.2.2. Software Funding

Funding constraints represent a significant challenge as licensing costs of proprietary learning management system software are usually high. For example, in 2004, the trial of a well-known software brand cost the organisation $20,000 for one month. Between 2004 and 2006, ADHB used a proprietary software application with annual licensing costs of $13,000. In late 2006 the possibility of using ‘open source’ software (no licensing costs) was investigated and the application with the most promise was MOODLE; it had no licensing fees and was rapidly increasing its share in NZ and the global market (http://moodle.org/stats/).

3.2.3. Application hosting and service support

After MOODLE was installed it soon became evident that customisation and support needs existed which over extended our limited internal resourcing capabilities. It was considered more efficient to outsource this part of the business to a third party application hosting and support service. The annualised cost was less than $1 per worker.
3.2.4. Infrastructure and local support

Access to MOODLE (which has an internet URL) occurs via a link on the organisational intranet. It was helpful that at the time of implementation, the organisation owned an extensive network of computers, most of which were ‘internet-live’. Many staff and clinical workers had access to a local computer. The most frequent helpdesk support needs were requests for email addresses (many nursing staff did not know their own organisation address) to set up an account, internet access rights and general navigational advice (for participants with poor computer literacy). New employees now receive an email address upon commencement of duty. The link to the organisation MOODLE internet site has open clearance so no special internet access rights are needed. Navigational literacy is improving steadily as existing staff become more familiar with the course environment. The number of assistance inquiries is low and easily managed. For example, the MOODLE administrator receives an average of 15 email inquiries a week and the IS call-desk logs reflect a similar rate.

3.2.5. Electronic (digital) learning content

Acquisition of training content (courseware) arguably represents the most significant ongoing challenge – due in part to authoring which is time consuming. Course acquisition can be a choice of ‘buy it’ - or ‘build it’. ‘Buying it’ involves purchasing generic ‘off-the-shelf’ content in CD format, a software installation or a subscription to an online service. ‘Buying it’ carries the risk that the content is rapidly obsolete and not readily updated.

Options to ‘building it’ include outsourcing development to a third-party specialist business and in-sourcing. The latter requires ‘in-house’ expertise and resources. ‘Building it’ incurs development costs. These are associated with taking the learning specification and turning it into an effective learning event that is ready for delivery [16]. Both outsourcing and in-sourcing require ongoing consultation with internal subject matter experts (SME). The implication is how much time these workers usually have to give to assist the (outsourced) developers; this encroaches on patient care time. High development costs are also associated with outsourcing - one course cost $50,000 and took 20 months to complete! Outsourcing also creates a dependency on the development house that is on-going. In the ADHB experience it is not recognised as a sustainable long term strategy – especially if demand for courses is high and urgent.

With a specialist instructional designer and authoring tools that are cost-effective and relatively easy to use, in-house course development is attractive. There are further advantages to in-sourcing. For example, we understand our organisational processes better than external vendors; we can develop precisely what we need, have direct control over future development and can react quickly with modifications as the business changes. After completion, we have a thorough understanding of how it works. Consultation time by SME’s is reduced. Finally, the organisation has committed to the fixed cost of the project team salaries. In our collective experience, content development in partnership with our SME’s can be rapid. Currency is easily and efficiently maintained. Educator understanding of instructional design has also matured so that some create their own courses with minimal expert assistance. Course updates are completed ‘on the fly’ by the Tutor and immediately become available to the audience.

3.2.6. Change management

Some managers were initially reluctant to allow their staff internet access “because they would become distracted from their work”. However, these concerns were assuaged when it became evident that certain classroom-based courses were being phased out (lack of resources), that more and more mandatory courses were only available online – and that the number of reported incidents of internet abuse was actually very small. Online learning has changed the way that training occurs. This approach – called blended learning -complements face-to-face and skills-based (practical) training and supports a variety of audiences including:

- New Employees (orient them to organisational programmes and policies; teach skills, knowledge, abilities and attitudes to safely and efficiently perform their work).
- Current Employees (to ensure currency of understanding of policy and regulations; to expand knowledge and skills necessary for upward mobility).
- Supervisory and Management Employees (to provide supervisory, management and human relations skills).
- All Employees (to address safety, risk management and compliance issues).

3.3. Increasing Regional Awareness

Symposia were convened in 2008 and 2009 to increase awareness. 180 attendees from nineteen organisations across New Zealand were represented in 2009 – including twelve DHB’s. Many inquiries for further information, support and training followed.

These were mainly about ‘how to’:
• Use MOODLE.
• Populate a learning management system with courseware.
• Implement online learning organisation-wide.
• Drive and manage the associated organisational change.
• Trouble-shoot business, educational and technical issues.

This interest was instrumental in driving the development of a ‘shared service’ for courseware acquisition.

3.4. A Shared Service to Acquire Courseware

‘Meeting the Challenge’ recommends that, “… DHB’s work together to develop shared electronic access …” [11]. With experience gained over seven years, the ADHB possesses considerable intellectual property in the form of online courseware assets, courseware development expertise and programme implementation experience. Anticipating the need of other DHB’s for guidance and support in this regard, ADHB began to develop a process support model in 2009 for sharing of ADHB course assets with other DHB’s. A similar concept called a ‘Toolbox’ is employed by the National Training Framework in Australia [17]. This ‘shared service’ is deployed off a third-party website called ‘Learning Central’. It is supported by a MOODLE hosting and support organisation. Key support elements include collaborative and networking opportunities, course building, courseware sharing and the achievement of economies of scale. These elements are illustrated in figure 1.

![Collaboration Using Learning Central](image)

**Figure 1 - Processes and relationships supported by Learning Central**
There are several important features of Learning Central.

- Available for use by affiliated DHB’s who have acquired a MOODLE site.
- Attracts no direct cost.
- Supports collaboration around course-building, course-sharing, and knowledge networking.
- Uploaded courses are ready to use ‘as is’.
- Course customisation by the recipient DHB is possible after download.

### 3.4.1. Developing the Learning Central Model

A DHB that opts to initiate an online learning strategy using Learning Central could proceed through three stages.

**Stage 1**

- DHB elects to have a MOODLE ‘sandpit’ (provided free of charge on a user-trial basis).
- DHB Enterprise Manager given access to Learning Central.
- DHB signs a course sharing agreement with the donor DHB (this protocol facilitates the process).
- DHB selects a (donated) course to download (see figure 2).
- DHB installs (‘restores’) the course on its MOODLE site.
- Installed demonstration course is fully functional.
- Questions and answers can be posted to the forum and these contributions can generate a rich knowledge network.
- DHB commences a trial implementation using the donated course.
- Trial provides information for preparing a business case or a complete implementation plan.

**Stage 2**

- DHB purchases a MOODLE hosting and service support agreement.
- Learning Central is accessed to acquire additional courses.
- Course is customised (if necessary).
- Course is introduced in a lock-step (contained) manner to the organisation (allows time to gather experience and for organisational change to occur).

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**Figure 2 - Screen image of Learning Central course download page**
Stage 3

- As instructional design and implementation expertise increases, DHB begins to build audience-specific courses ‘in-house’.
- Upload its courses to Learning Central for the benefit of other DHB’s.
- Several DHB’s collaborate around a course-building opportunity of mutual interest using Learning Central.
- After completion of course building activity each DHB downloads the course to their MOODLE site – and customises this, if needed.

3.4.2. Strategic Benefits of Learning Central

Course building represents the biggest cost to an online learning programme implementation [18]. An outstanding benefit of course sharing is the leveraging of economies of scale: the larger the intended audience, the greater the return on the investment. For example, Learning Central has been used to concentrate scarce high-quality technical, clinical and educational staff from two (or more) collaborating DHB’s around a course development project of mutual interest. Creating communities of practice in this way leverages scarce resources for the benefit of many. The use of online forums provides support to teams struggling with the ‘how to’ of programme implementation.

It has been suggested anecdotally that one (centralised) national MOODLE site should be available to all DHB’s as this would be more cost-effective to operate. Conceptually, the idea sounds appealing, but the ‘devil lies in the detail’. It is only really feasible if all the DHB’s were consolidated into a single organisation with a single record-keeping database. This is currently not the case as -

- DHB’s enjoy a measure of self-autonomy – a ‘centralised record-keeping system would difficult to administer.
- Each DHB is best positioned to know its internal business better, i.e., to understand its local training needs and manage its own participants.
- Such a ‘nation-wide’ site would make reporting at the local organisation-level complex.

Learning Central is ‘centralised’ only in so far as it provides an internet-based access point for course acquisition and social networking.

- How does the Learning Central model provide strategic value? It describes a networked solution for sharing courseware between participating healthcare providers at a regional or national level. Learning Central supports collaborative activity at the Enterprise Manager or Tutor level. Sharing of expertise can occur when several Tutors from different DHB’s collaborate to build a new course. When courses are shared training consistency is maintained and this supports workforce mobility across DHB’s without the need to ‘retrain’ on the ‘same’ curriculum.
- How does the strategic activity translate into improved business results? Smaller DHB’s that lack expertise enjoy access to downloadable courses. This accelerates ‘time-to-audience’ and allows more training commonality and integration to occur between DHB’s. A ‘sharing of minds’ between subject matter experts in different DHB’s may lead to improved course design. It could even provide a mechanism to accredit participants with training credits who transfer between DHB’s.
- How does the Learning Central model lower costs? This third-party hosting and support solution attracts no additional cost. Significant time savings are achieved when courseware produced by one DHB (or several working collaboratively) is used by others DHB’s (economies of scale).
- How does the Learning Central model reduce duplication? There are real economies of scale in doing common functions once rather than as many times as there are individual DHB’s. Wastage that occurs by inadvertently ‘reinventing the courseware wheel’ is avoided.

The Learning Central model is sustainable provided DHB’s contribute courses, that there is investment in operational resources and a carefully focused management strategy. It will take time before its full impact becomes evident, but exciting potential exists for a ‘virtual campus’ to evolve that allows course and expertise sharing across New Zealand.
4. Recommendations

ADHB intellectual property and course assets represent a national strategic asset. The Ministry (or its delegated agencies) is encouraged to exploit the value of this asset in the following ways.

- Develop a national plan for implementation of online learning to support DHB workforce development. This could include using Learning Central for joint coordination to avoid duplication of courses.
- Encourage institutional leadership to work collaboratively - rather than in competition.
- Being an agent of change.
- Advise smaller DHB’s (with fewer resources) to participate.

5. Summary

This paper informs on a locally developed business solution for the sharing of course assets. The ADHB online learning strategy and the ‘shared service’ model that has been described is congruent with a key objective of ‘Meeting the Challenge’; namely, ‘excellent value’. Its intrinsic strengths include reduction of duplication, cost-effective courseware production, leveraging of economies of scale, consistency of training content and increased alignments of collaborative endeavour at a regional - and hopefully - national level.

6. References


