



LEARNING MANAGEMENT SYSTEM

2005 COMPUTERWORLD HONORS CASE STUDY

EDUCATION & ACADEMIA

THE DEFENCE ONLINE CAMPUS ENHANCES DEFENCE OPERATIONAL CAPABILITY THROUGH THE DEVELOPMENT OF A HIGHLY FLEXIBLE LEARNING INFRASTRUCTURE. A COMMON ARCHITECTURE AND UNIFORM BASIC STANDARDS ENHANCES THE ADMINISTRATION OF LEARNING, AND THE DESIGN, DEVELOPMENT, PRESENTATION, USE, REUSE AND SHARING OF LEARNING MATERIALS. [20045172]

A Search for New Horizons



SUMMARY

The aim of the Defence Online Campus is to enhance Defence operational capability by the development of a Defence Flexible Learning infrastructure. Through the provision of a common architecture and uniform basic standards, this infrastructure will provide users with the ability to design, develop, present, use, reuse and share learning material and to administer learning.

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APPLICATION

The Defence Online Campus is the visible face of the ADO's Flexible Learning framework. This comprehensive Flexible Learning framework is a critical element of a world class training and education system which is consistent with the axiom that "people are our most valuable asset". It contributes to a climate where "our people can do their best" and provides both direct and indirect incentives for recruitment and retention.

A whole-of-Defence approach to a Flexible Learning capability is achieving greater efficiencies and effectiveness, fostering a joint approach and achieving better outcomes for the ADO. A comprehensive Business Case for an ADO wide Flexible Learning framework commenced in Feb 2002. A complex Defence procurement process commenced in Oct 2002 and the Defence Online Campus went live on 03 Nov 2003. Defence Online Campus' state-of-the-art learning technology provides service to more than 90,000 military, civilian personnel and Defence Contractors, which makes it one of the largest corporate e-Learning system implementations in Australia. Defence Online Campus is managed by the Directorate of Flexible Learning Solutions (DFLS) located at Northbourne House, Canberra. Currently, six people make up the CAMPUS team from Defence with several contractors providing specialist support. The DFLS was established to create a whole-of-Defence Flexible Learning infrastructure and environment.

The Defence Online Campus has the capacity to meet the requirements of all ADO personnel which includes, but may not be limited to:

- a. Australian Defence Force (ADF) personnel;
- b. ADO Public Service personnel;
- c. ADO and ADF contractors or professional service providers;
- d. Exchange Officers from Foreign Countries; and
- e. Civilians trained by the ADO.

The foundation and direction of the ADO Flexible learning capability is based on:

- a. Strategic Plans;
- b. Business Drivers; and
- c. Policies governance, standards and processes.

2.1 Strategic Plans

Defence Online Campus links to the Defence White Paper. 'The White Paper made it clear that people are the key to capability,' we need to '...deliver on a Defence Plan that balances today's capability with tomorrow's, and balances investment in people with investment in platforms'. In order to protect, grow and invest in our human assets and therefore our capability, a more effective and efficient training environment is necessary.

Overall, Defence Online Campus seeks to build operational capability through the development of a Flexible Learning infrastructure. The proposed infrastructure provides flexibility, accessibility, maturation, knowledge transfer and retention of knowledge to training and education within Defence. The use of eLearning, in a blended learning solution, provides a more effective and efficient training environment. Defence Online Campus provides a coordinated approach and builds on existing eLearning initiatives within the ADO without obstructing or prohibiting current developments.

Defence Online Campus links to the Whole-of-Defence Strategy Map. It directly and indirectly adds to the ADO's mission of 'Delivering the capability to win today & tomorrow'.

The direct links with the Whole-of-Defence Strategy Map are:

- a. O5: Exploit Science and Technology. Several Government Departments and private companies have exploited current technology for gains in learning effectiveness and efficiency. The ADO should be exploiting similar, relevant, technologies.
- b. E5: Build interoperability. The development of a Flexible Learning infrastructure and environment will provide the ability for the training systems within the ADO to work seamlessly with each other.
- c. P6: Take the opportunity to learn and develop. A Flexible Learning infrastructure will allow ADO personnel greater access to learning material and allow them to take more responsibility for their own learning.

2.2 Business Drivers

The implementation of Defence Online Campus is an enabling project for the ADO. The deliverables build the Flexible Learning capability within the Organisation and overall, reducing the ongoing cost of eLearning. The major return on this investment is the ability for a Flexible Learning capability to provide the ADO with substantial improvements and efficiencies, and effectiveness in the way that training is administered, managed and reported on. At present, each Flexible Learning initiative is attracting similar initial fixed infrastructure costs. By providing an infrastructure and environment that enables all areas within the ADO to utilise this method of training delivery, there will be a reduction in the considerable duplication of effort and initial fixed costs within the ADO.

The current situation within the ADO is that the majority of Flexible Learning initiatives, either systems or content, are developed with a single Service purpose or solving a particular solution. This situation has led to software and eLearning consultants competing and targeting different areas of the Organisation in order for their particular products or solutions to be implemented. The current uncoordinated approach has led to:

- a. duplication of IT infrastructure;
- b. solutions with different and/or incompatible standards;
- c. duplication of some initiatives;
- d. inability to share or reuse material; and
- e. a lack of knowledge of Flexible Learning initiatives throughout the ADO.

The success of an ADO Flexible Learning capability is reliant on a holistic approach. To ensure the successful implementation into the ADO, the Flexible Learning capability consists of the following key deliverables:

- a. Uniform policies governance, standards and processes;
- b. Change Management and Education;
- c. Development of and the conversion of course content;
- d. A single Learning Management System (LMS), Learning Content Management System (LCMS) and basic Content Creation tool;
- e. Whole-of-Defence eLearning Infrastructure and Environment;
- f. Systems integration with the ADO HR system; and
- g. Defence Flexible Learning Centre.

2.3 Policies, governance, standards and processes

The creation of detailed policies, governance, standards and processes has ensured the ADO has a common coherent flexible learning process for the management, creation and delivery of flexible learning initiatives across the ADO. The documents that underlay flexible delivery within the ADO are:

- a. Policies and Governance – All policies relevant to the Defence Online Campus are referenced and identified with this document. The document also outlines the Governance structure and the responsibilities of each member of the CAMPUS Governance Framework.
- b. Part A – General (guidelines common across both the Defence Online Campus Learning Management System (LMS) and Defence Online Campus Learning Content Management System (LCMS)).
- c. Part B – LMS (guidelines specific to the Defence Online Campus LMS).
- d. Part C – LCMS (guidelines specific to the Defence Online Campus LCMS).
- e. Content Development Standards - standardise the style and structure of eLearning courses and modules that will be deployed on Defence Online Campus via the Defence Restricted Network (DRN).

DFLS is a Directorate of Defence Education and Training Development Branch (DETD), Defence Personnel Executive (DPE)

Dr Allan Hawke, Defence Renewal Roadmap, July 2002

Blended learning is a current industry term relating to the delivery of learning. In its broadest definition it refers to the use of multiple solutions and training techniques within the same learning program.

BENEFITS

The establishment of a Flexible Learning infrastructure and environment provides effectiveness benefits in the administration, management and reporting of training within the ADO. The establishment of Defence Online Campus enables a greater number of areas within the ADO the use of flexible delivery methods, especially eLearning, as a delivery method for their training and to therefore leverage the effectiveness outcomes that flexible delivery provides.

Defence Online Campus provides greater access to training, allowing individuals to develop their own skills when they are required. ADO personnel now have 24/7 access to crucial compulsory training such as Occupational Health and Safety, Equity and Diversity. This reduces the requirement of travel for both the personnel delivering and receiving training.

Defence, as an organisation, and its members, as learners, training administrators and managers enjoy a variety of resource efficiencies and learning benefits from the Defence Online Campus. The flexibility, convenience and ability for personnel to attend training at their usual work locations ensures that time away from the workplace is reduced, significant efficiencies are gained through resource savings in time, money and effort, for example, travel and accommodation cost savings. Additionally, the reinforced learning benefits available to individuals who seek to review, refresh or relearn training at a time and place of their choosing is a very positive learning advantage.

The Army has conducted several trials for their soldier promotion courses using a blended solution of interactive CD-ROMs, referred to as Technology Based Training (TBT), and face-to-face instruction. Army trials held demonstrated that the Army TBT products improved learning retention. The soldiers who learnt via the TBT materials consistently performed better on post and retention tests compared with soldiers who had only received face-to-face instruction. This was attributed to the benefits of repetition and reinforcement of the information that the multimedia instruction provided to the students. Furthermore, qualitative data indicated that the soldiers preferred the more flexible approach to learning that the TBT provided. Students could learn at their own pace and were able to revise uncertain areas by revisiting the relevant section of the package.

Defence Online Campus provided a comprehensive infrastructure for all ADO personnel. Prior to the introduction of the Defence Online Campus, the creation and delivery of flexible learning packages, especially eLearning, was only available to a limited number of specialised personnel.

There has been a significant up-skilling within education and training development personnel in the area of flexible delivery methodologies. Through the use of the integrated Learning Content Management System (LCMS) and content authoring tools, training developers within the ADO create high quality eLearning content quickly and easily. An additional benefit is that with a small amount of training the Subject Management Experts (SME) are able to provide feedback to developers utilising the system.

The provision of the Defence Online Campus has provided the ADO with the following new benefits:

- a. controlled and easy access to large libraries of education, training and assessment courses/activities;
- b. central (and where on-line learning is involved, usually fully-automated) monitoring, recording and reporting of learning activities and outcomes (particularly useful in respect to legislative, regulatory, auditable and licensing related training);
- c. customised management of individuals' and groups' learning paths to achieve 'just enough, just in time' learning that reduces overlaps and duplication and results in shorter, more flexible group and individual programs;
- d. improved communication between learning organisations to better integrate methodologies and working practices, and to ensure consistent, common standards for learners, trainers and managers;
- e. timely access to refresher training (particularly legislatively required learning) whenever needed;
- f. support of Defence's interaction with the National Training Framework and the competency based training system that enables visibility of career progression and qualification/accreditation opportunities, so improving recruiting, retention and motivation;
- g. the nurturing of a culture of continuing learning and personal development;
- h. conformance to uniform standards;
- i. maximisation of the automation and ease of learning coordination, administration, management and reporting of online and blended education and training;
- j. provision of personalised training and/or access to training based on the requirements of groups and an individual's requirements;
- k. support of both formal and informal education and training;
- l. provision of the creation, aggregation and publishing of content;
- m. all changes to training content is tracked and auditable;
- n. durability, interoperability, accessibility and reusability of content;
- o. accurate data relating to flexible delivery training and education within the ADO;
- p. timely and accurate reporting on training activities;
- q. increased access to training;
- r. standardised training material regardless of where the training is undertaken;
- s. reduction of administration associated with training through process automation;
- t. reduction of duplication in training activities; and
- u. integration with the ADO HR system.

IMPORTANCE

The Information Technology that supports the Defence Online Campus is a single integrated LMS, LCMS and basic Content Creation tool. This software is supported on a centralised IT server platform and operates within the Defence Restricted Network (DRN). The DRN is a Wide Area Network (WAN) available to nearly all ADO personnel.

Overall, the availability of the Defence Online Campus via the current IT infrastructure without loading additional software to over 90,000 DRN terminals was a critical factor for the ADO. This allowed greater access with minimal disruption to the Defence Online Campus customers.

Learning Management System

The LMS component of the Defence Online Campus is THINQ. This software offers a comprehensive suite of functions for managers, administrators, trainers and learners. This proven web-accessibility of THINQ is the central point for extended ADO wide access to learning information. Through DRN access, learners can do everything they need to do - from monitor the course catalogue and their individual learning plan, to register for and take training. THINQ's Web Administrator module supports the administration and management of learning programs and provides facilities to create, schedule and manage learning events. It also supports skill and learning plan management, learner enrolment and resource assignment and management.

Learning Content Management System

The LCMS component of the Defence Online Campus is OutStart Evolution. This software provides the ADO with both Learning Content Management and Content Creation functionality. The incorporation of the entire range of course creation functions, including authoring, production management, security, version control, subject matter expert reviewing, and tracking, provides maximum benefits for content authors.

The LCMS provides a common, central, shared, reusable content repository. The repository enables collaborative development of single-source, blended learning content (web, ILT presentations, print, CD and mobile PDAs), which is managed within a common repository.

As content authors are geographically dispersed throughout Australia, one of the most important aspects of the LCMS is the ability for local authors, editors and training authorities to create and edit learning content both locally and remotely.

Overall, the use of a common IT infrastructure and the implementation of software that conforms to current and developing industry standards (eg. SCORM and AICC), has ensured that the ADO approach to flexible learning is strategically coordinated. It provides the ADO with:

- a. the sharing of information and services across the ADO;
- b. clarity as to who designs, buys, builds and delivers flexible learning in the ADO, especially for joint training and non-operational;
- c. consistent application of Organisational processes over varied and isolated delivery;
- d. the reduction of lost opportunity costs for ADO, eg. excessive time spent in travel or in face-to-face training; and
- e. the reduction of duplication of effort and non-cost effective use of learning.

ORIGINALITY

The ADO is the largest Australian Government Department. It has over 90,000 employees and contractors. Defence is comprised of three services (Army, Navy and Air Force) and 11 groups. This represents a hugely varying workforce with a multitude of skills.

What makes this capability implementation stand out within Australia is:

- It was and still is the largest 'whole of organisation' implementation of a flexible learning capability that encompassed integrated LMS, LCMS and Content Authoring tool.
- It was and still is the only comprehensive implementation of a flexible learning capability that encompassed integrated LMS, LCMS and Content Authoring tool into an Australian Government Department.
- It is a fully coordinated implementation of flexible learning capability within a large Australian Government department where education and training is controlled by each service and group, requiring acceptance by the three services and 11 groups.
- It encompasses a centralised coordinated approach to flexible learning within an organisation that has decentralised education and training systems.
- It is deployed on a restricted network, which has a comprehensive security model.

SUCCESS

DFLS commenced the Defence Online Campus software and hardware implementation 06 Jun 2003 and went live on the 03 Nov 2003. The target audience for Phase 1 of the implementation was the Australian Army and the Defence Material Organisation (DMO). This provided 45,000 ADO personnel with access to service provided by the Defence Online Campus. To ensure acceptance by both Army and DMO, interfaces were designed and implemented to meet their specific requirements.

Importantly, the implementation of Phase 1 was completed on time and within budget. A team of 6 ADO personnel and a Prime Contractor with 8 on site consultants achieved this success.

On the 03 Mar 2004 the Defence Online Campus went live to the whole of the ADO. This was eight months earlier than planned and allowed wider access to the compulsory ADO training such as Occupational Health and Safety and Diversity and Equity.

Successful implementation of a flexible learning capability within the ADO required a holistic approach. Software and IT infrastructure were only two components of making flexible learning successful. Prior to and during the implementation of the Defence Online Campus, the Directorate of Flexible Learning Solutions developed the policies, governance and standards to manage flexible learning development and delivery within the ADO. These resultant documents were approved for use by all the ADO Services and Groups. In addition, DFSL embarked on an aggressive change management and education program.

DFSL organised and formed the Campus Management and Working Groups. These two groups have representatives from all areas with the ADO and are a significant part of the change management and communication strategy.

The two main customers that have been impacted by the Defence Online Campus are:

- a. Learners; and
- b. Personnel involved in content development.

DFSL has trained over 130 ADO personnel in the development of eLearning content and currently there are 75 authors creating content utilising the Defence Online Campus authoring tool to provide quality interactive training packages.

The ability for SMEs to review and provide feedback to authors during content development has provided functionality not previously available. A quote from one ADO executive conducting the review highlighted the simplicity.

"It really is pretty simple going in through the review screen and fixing each one as you go. What a great system." dated 11 Oct 2004.

Defence Workplace Relations.

Learners now have 24/7 access to undergo training when it is most suitable to them. The number of courses and completions are increasing exponentially as acceptance of Defence Online Campus increases. The following quotes highlight the acceptance by learners of flexible learning and are a significant success for the implementation of flexible learning within the ADO.

"To Whom.....Just a note to say that your Website and learning capabilities given to us are much appreciated. Easy access at any time, that I guess is how it should be. I am now in the middle of course number 10, actually enjoy the experience of using the program and learning at the same time.

Great job, keep up the good work." Dated 15 Aug 2004. Royal Australian Air Force.

"Dear DLFS, I have just completed the course called "Fair, Inclusive and Bully-free". I think it was excellent. The content was clear and well written without being condescending or patronising (many other courses I have done in the past seem to treat me like a primary school child).

A great achievement considering the course has to cater to a very diverse audience. The examples were very useful. The assessment questions were intelligently constructed, challenging and enlightening. I like self-paced learning, especially being able to slow down and read something 2 or 3 times when I can't comprehend it. Being able to stop and start as it suits me is very convenient. It took me over 2 hours to complete, and it was hard work because much of it was unfamiliar to me, but I got a great deal out of it."

Dated 08 Apr 2004. Defence Science and Technology Organisation

The Defence Online Campus has exceeded its Key Performance Indicators and now provides Flexible Learning opportunities to all ADO with DRN access. Currently, 50 courses have been developed, purchased or converted for use on the Defence Online Campus. As at 18 January 2005, there were 50,473 enrolments in these courses and 26,378 course completions.

The courses below are an indication of the way in which the ADO has embraced Flexible Learning opportunities:

- Merit, Selection and Recruitment - has become a compulsory course for all EL1's and above and is available to all Defence employees (90 000 +)
- Simple Procurement - has enabled a blended learning approach to a normally Face to Face only course.
- Occupational Health and Safety - became a compulsory course for all Navy and RAAF staff, (civilian and Servicemen).
- Fraud and Ethics - used throughout Defence, augments the Inspector General's already high profile with other multimedia/video/DVD releases.
- Equity and Diversity, Enhancing Capability - used throughout Defence and soon to become a compulsory component of the Deployed Forces training.

The courses below are under development and due for release this year:

- The Peacekeeping Pre-deployment modules.
- Introduction to Logistics.
- Reserve Policy.
- Accountability and Alignment with Government title not finalised .
- Quality Environmental Management System.
- Risk Assessment.

· HR and finance system courses.

In summary, this quote from a Community and Public Sector Union (CPSU) employee is an indication of wider recognition of the achievements the ADO has made in the implementation of its Flexible Learning Capability.

“Oh, and a side note, I don't think I actually got a chance to tell you just how impressive the merit training package that has been put together actually is. I think it will go a long way to reassuring our members that Defence takes merit based selection very seriously indeed and has taken the effort to develop a top line training program.

I hope many other APS employers take note of what Defence has done and follow suit. To be honest when it is completed and being run I think Defence should consider having it nominated for a relevant Award to draw attention to the achievement.” Dated 16 Sep 2004 CPSU.

DIFFICULTY

The major overriding factor that increased the difficulty for the successful introduction of the Flexible Delivery capability into the ADO was aggressive timelines. From the initial research funding in February 2002 to providing a Flexible Learning System to all ADO personnel by 2004 increased the level of difficulty.

Australian Government Departments are required to work within the Financial Management Act. In addition to this, the ADO has an extensive Procurement Policy that must be followed to ensure that the process of procurement is both fair and equitable. Time is the major factor. The IT industry progresses at a rapid rate whilst ensuring that the procurement processes are followed takes time. To ensure the ADO requirements were met, the tendering process requirements focused on functionality and work processes.

Prior to the procurement processes starting, this ambitious project with its whole-of-Defence approach was classed as leading edge within Australia. Most major implementations of similar size and complexity were rare, if not non-existent, within Australia. The team relied on research relating to overseas implementations.

The ADO IT environment is a secure restricted network and due to the Defence obligation of accountability to the Australian Government and people, there are a number of significant processes that must be undertaken, such as extensive testing across the DRN, load balancing, impact of the network and traffic. In addition appropriate security testing and certification was required prior to implementation and only after a permit to operate was issued can the system be made available to the end users.

Integration with ADO HR system provided significant challenges and to this day continue to do so. Testing and retesting migrations scripts to ensure accuracy of data transfer requires experienced resources and effort. There are continuing problems with the software and course in relation to industry standards such as SCORM. DFLS soon identified that standard compliant software or content did not automatically provide seamless integration or operation. A number of system, courseware changes and patches were required to overcome content tracking errors and communications between the major components of the Software.

Management of expectations and change management provides its own challenges. Once customers realised the potential of the system, the resultant pressure on resources, especially human, required careful management to ensure realistic expectations were set and that DFLS could meet.

The ADO was and still is predominately a ‘Face to Face’ training culture. Changing the ADO from an expectation of exclusively ‘Face to Face’ training culture to a self directed learning culture, where appropriate, is progressing. However, as this has occurred growth in interest and the identification by customers of the potential benefits has caused growing pains. The ability to provide for this expansion with the limited resources available has required careful management.