

AUSTRALIAN *FLEXIBLE LEARNING* FRAMEWORK

Managed by the Flexible Learning Advisory Group on behalf of all States and Territories in conjunction with ANTA

Strategy 2001

Flexible Learning Fellowship Change Management Plan

Nancye Stanelis
Torrens Valley TAFE

In August 1999, the Australian National Training Authority Chief Executive Officers (ANTA CEOs) endorsed the *Flexible Learning for the Information Economy: A Framework for National Collaboration in Vocational Education and Training 2000 – 2004*. It has since been re-branded as the *Australian Flexible Learning Framework for the National Vocational Education and Training System 2000-2004 (AFL Framework)*.

The *AFL Framework* was developed by the Flexible Learning Advisory Group (FLAG, which was formerly known as the Education Network Australia Vocational Education and Training Advisory Group, (the EdNA VET Advisory Group or EVAG). It represents a strategic plan for the five-year National Project allocation for Flexible Learning. It is designed to support both the accelerated take-up of flexible learning modes and to position Australian Vocational Education and Training (VET) as a world leader in applying new technologies to vocational education products and services.

The *AFL Framework* is supported by annual implementation plans. These plans identify specific initiatives and an allocation of resources within each of the five Goal areas identified in the *AFL Framework*.

The Fellowship, of which this report is one outcome, was awarded in 2001 as part of the *Australian Flexible Learning Framework Strategy 2001*.

August 2002

The scene is Torrens Valley Institute of TAFE

The time is just after 8.30am in early May 2004. The telephone rings.

“Torrens Valley TAFE, good morning, this is Marcia”

“Good morning Marcia. Bill O’Donnell from Ultimate Homes here. I have a new staff member starting in our company’s finance section next week. She has some accounting background but needs a bit of training in our accounting package. What can you offer in the way of training that will get them up to speed as quickly as possible?”

Using the Institute’s online information system Marcia is able to enter the company name and identify it as one of the Institute’s regular customers, with a history of several trainees, an ongoing program of work based training for its clerical staff and a customised contract for coaching and mentoring of a new first line supervisor. She notes that the Institute is also providing some short workshops in conflict resolution and team work for company employees.

“How are you today Mr O’Donnell, still busy with that new estate? she asks.

“Oh yes,” replies Bill, “business is great, that’s why we are putting on another finance officer.”

With a quick question to clarify which software package the company is using Marcia is able to access information on a number of available options and advise Bill that the institute can provide

- *online training which can be accessed via the internet from work or home.*
- *full time intensive training to provide basic skills for their staff member utilising online training in a simulated practice firm environment on campus,*
- *ongoing class based training on a part time basis at a variety of times during the day and evening with an experienced facilitator.*

Using a checklist and form provided on the system Marcia records basic information about the new employee and the company’s course requirements onto a Registration of Interest and then forwards, via email, details of the training options which suit the company’s needs most closely. She arranges for an online learning counsellor to contact the new employee to discuss their existing knowledge and preferred learning styles and to arrange access to the online learning system.

Marcia adds details of the client to the appropriate counsellor’s task list and forwards an email alert to the Business Services faculty to advise them of the potential new client.

Within a few hours, following a call from the counsellor, the new client has been enrolled into a combination of intensive on-campus and work based online learning, the company has paid the necessary fees online and the employee has received their login and password to the network. The online orientation provides a video introduction to the campus and particularly the location of the computer suites,

learning resource centre and facilitators with whom they will come in contact during their program.

On the system the employee finds a personalised welcome message and introductory materials that provide them with a series of activities matched to their skills and existing knowledge. As the new student works through the activities the Learning Management System adjusts the learning program in light of responses and progress, adding additional explanations, resources and activities where extra learning is needed and deleting materials which are already well understood. Interaction with other online students via chat sessions and discussion forums and in some of the activities adds variety while the facilitator provides timely encouragement and feedback.

Progress is steady, the materials are interesting and the new employee and their workplace are pleased with progress and the immediate applicability of the new knowledge. The process has been efficient and effective for everyone involved including the company with the training need, the trainee and the Institute's staff.

The above scenario is the result of the Knowledge Management Strategy that is proposed in this Change Management Plan – the achievement of an integrated customer focussed learning delivery system that begins at an initial contact and continues through to successful employment outcomes.

List of Contents

Introduction	Page 6
1. CURRENT ISSUES AND STRATEGIC DIRECTIONS	7
1.1. The changing context for Vocational Education and Training (VET)	7
1.2. South Australian context	8
1.3. Torrens Valley TAFE	10
2. EMERGING ISSUES	12
2.1. Convergence of information technology and education	12
2.2. E-Learning	14
2.3. Learning Objects	16
2.4. Standards and interoperability	18
2.5. Knowledge management	21
2.6. Pressure for collaboration	22
2.7. Creating a vision	23
3. CHANGE MANAGEMENT STRATEGY	28
3.1. Theories of change	28
3.2. Organisational priorities and structure	29
3.3. Communications plan	29
3.4. Technology infrastructure	29
3.5. Management involvement	30
4. PROJECTED DEVELOPMENTS	32
4.1. Staff capability	32
4.2. Online content development	33
4.3. Content management strategy	34
4.4. Customer service strategy	35
5. EVALUATION	36
Bibliography	38

Introduction

Today's work environment is characterised by nothing so much as change –change that is unceasing and constant. It is hardly surprising that many workers feel pressured and time poor and that there is a growing demand from employees for family-friendly work practices. Organisations are looking for solutions that can deliver a significant improvement and which are capable of better positioning the company to take advantage of future market opportunities to maintain their business viability.

Australia faces an increasing need to move into global markets to sustain development that cannot be resourced through local markets alone. This drive for world class production and export dollars must also be seen in the context of efforts to open our local markets to overseas suppliers and companies. Australian companies need to be competitive with the best that is available world-wide and the pressure to achieve these goals has meant an emphasis on the need for an adequately skilled and capable work force. Whether it is in agricultural production, where Australian farmers are already amongst the most efficient in the world, in mining where some sixty percent of the world mining technology is Australian made, or the wine industry which is consistently increasing its export earnings at the same time as it wins top competitions across the globe, Australian industry must be able to match it with the best that the world can produce.

This pressure is also impacting on the Vocational Education and Training (VET) sector as the need for training that is relevant, industry based and flexible in its delivery increases.

The Commonwealth Government through the Australian National Training Agency (ANTA) has recognised this need and developed a national strategy for the information economy – it is this that provides the background to the Australian Flexible Learning (AFL) Framework

Australia seeks to participate in a world that is characterised by a rapidly developing, globalised and knowledge-based economy. The Vocational Education and Training (VET) sector has a key role to play in Australia's successful involvement in this new economic and social environment. The AFL Framework is a five-year strategic response by the VET sector to the challenges created by this transition to the new economy. It will focus on:

- *making the flexible delivery of Vocational Education and Training a reality for all Australian learners*
- *helping Australia to be recognised as a global leader in the application of new technologies to VET products and services.*

Developed by the [Flexible Learning Advisory Group \(FLAG\)](#), (formerly known as the Education Network Australia Vocational Education and Training Advisory Group (EVAG)), and endorsed by the Chief Executive Officers of the [Australian National Training Authority \(ANTA\)](#), the AFL Framework is being used to tackle key issues affecting access to, and widespread up-take of, flexible learning - particularly online learning - by the VET and Adult Community Education (ACE) Sectors.

This Fellowship Change Management Plan attempts to highlight some of the issues in organisational management and particularly in the move to a learning organisation whose success will increasingly be based on the effective creation and use of knowledge.

1. CURRENT ISSUES IMPACTING ON VET

1.1. The changing context of Vocational Education and Training (VET)

The effects of competing in the global economy are already well documented and form part of the impetus for the emphasis on the skilling of the Australian workforce that is the primary objective of vocational education and training.

The arrival of the Information society and the subsequent shift from workers who predominantly were producers of goods to knowledge workers who provide services or work with information has been a second major influence. The proliferation of information with the widespread availability of computer technology has seen a consequent increase in the amount of information that must be dealt with in the daily course of business.

The pace of change also impacts on the amount of information which is available, new products, new regulations, financial and marketing materials, new technology, and new ways of doing business have all become more pervasive as we move to a society where much of our business is virtual and where the bulk of transactions are moving on line. The changes in the banking industry are a prime example of the changes that are occurring in many traditional industries over relatively short periods of time. One of the significant challenges is to use the technology to improve business from the customer's perspective as well as that of the organisation thus avoiding criticism such as that which the banking industry has experienced.

Among the many changes and influences affecting the delivery of vocational education and training perhaps none is so profound as the changes within the workplace itself. The following table highlights some of the changes that are occurring within Australian workplaces and outlines the implications that this has for the learning needs of workers, including the workers within the VET system itself, as well as for the learning needs of the organisation.

Changing workplaces and the implications for learning	
Workplace developments	Learning and content implications
Outsourcing of non-core business functions	Learning content needs to focus on key, strategic knowledge.
Greater use of temporary and contract workers	Temporary employment agencies have greater and more sophisticated learning needs. Independent contractors need to acquire their own learning content.
Portfolio careers and more job switching	Companies will have to continuously train and educate new employees. Organisational knowledge will need to be captured or lost as workers become more transient.
Increasing automation of low skill jobs	Increasing need for lifelong learning and skill enhancement on-the-job
Increasing use of project teams, including virtual teams	Workers will need "people skills" to work effectively with a variety of people. New skills for working "at a distance" and maintaining commitment and a sense of community will be needed

Changing workplaces and the effect on learning needs ...	
Workplace developments	Learning and content implications
Growing emphasis on innovation and creativity	Creating training and content for soft skills is complex – and typically needs to involve groups, not just the individual.
Increasing individual responsibility and accountability	Individual workers will have a greater influence and greater say in learning content.
Changing employer-employee relationships resulting in less loyalty and trust and shorter work tenure	Employers may be less willing to invest in costly training. Employees will need to take individual responsibility for developing the competencies for which employers will pay.
Growing number of small and medium size enterprises	Learning must be embedded in the work tasks or take place at home. Learning needs to be practical and of immediate use to warrant time spent.
Spread of e-commerce operations in most companies, changing jobs and responsibilities	Both managers and operations personnel will increasingly need IT and e-commerce related learning
More demanding cycle times and cost constraints	Just-in-time and just-enough training to meet immediate needs in the most cost effective manner
Increasing requirement for compliance with regulations, technical, industrial and social specifications eg maintenance and servicing of equipment, use of chemicals, occupational safety, and privacy	Effective training, preferably with on job access to information and increasingly, a need to provide evidence to support inspection or audit of both the provision of training and compliance.
As a result of the above changes a need for more effective information management and knowledge sharing.	Formal learning systems should complement and integrate with both formal and informal knowledge management systems.

Adapted from Nilsen, Jorgen Andre (Oct 1999) *The future of e-learning content*. SRI Consulting Page 48

Within the VET sector itself all of these workplace changes can be identified. The formation of the Australian Quality Training Framework (AQTF) to ensure that Registered Training Organisations (RTO) meet the requirements for provision of high quality training is one example of the need for training, provision of information and maintenance of evidence to prove compliance. Occupational Health and Safety is another area of compliance which has impacted on all training providers.

Recognising that these changes are occurring and that they have significant implications for the provision of training to the Australian workforce is critical to the future of the VET sector. Providing training to meet these increasing demands, within a context of financial constraint, has encouraged many organisations to look for ways in which these demands can be met in ways which ensure quality but which provide efficiencies in the means of development and delivery.

Vocational education and training needs to embrace the new meaning of learning in every aspect of its operations. It must be accessible at different stages of clients' lives and have the mechanisms to recognise and value people's experiences as knowledge. Education and training needs to be delivered through the media appropriate to the client's learning preference and be convenient when balanced against the competing demands in the learner's life.

To use a now well-known phrase, clients should be able to access the training they want, "where, when and how" they want it.

AFL Framework 2000

Over the last two years the AFLF projects have been implemented with the aim of increasing the number of creative capable people within the VET sector and also increasing the availability of world class online content.

1.2. South Australian context

Following the change of government in South Australia in March 2002 TAFE Institutes, along with the Office of Vocational Education (OVET), TAFE Business Services (TAFE Biz) and a number of other Government Agencies and statutory authorities have been separated from the former Department of Education Training and Employment and amalgamated to form the new Department for Further Education, Employment, Science and Technology (DFEEST). Key drivers for the new department will be implementing the government's strategy for economic development and social inclusion – two platforms that are traditionally key elements of TAFE's agenda.

Major reviews have recently been commissioned which will focus on the governance, financial viability and structure of TAFE Institutes in South Australia and on the State's skills profile. Results of these reviews along with a business plan for the new department are expected late in 2002. It is anticipated that TAFE will have a key role to play in providing training to meet the need for a skilled workforce to support enhanced economic growth in the state. To enable this to occur action is needed to ensure that TAFE has the systems and capability to respond to this demand efficiently and effectively. A key element will be TAFE South Australia's capacity to deliver flexible learning as envisaged in ANTA's *Bridge to the Future*.

In December 2003 the current edition of WebCT will cease to be supported. This has prompted the creation of a departmental working group to review the available learning management systems and to recommend replacement for the current edition of WebCT that is the main platform used by TAFE Institutes for the delivery of online learning programs. Considerable staff training has been undertaken in recent years to enable staff to develop and deliver programs using this platform. While few purely online courses exist, many examples of blended learning are evident.

Communication hubs, online resources and bulletin boards support many courses where the majority of the program may be face-to-face or more traditional print and video based distance delivery. This investigation into the future use of WebCT has coincided with a resurgence of interest in an existing and larger project to provide a web enabled platform for TAFE SA for business operations, course information and learning delivery known locally as the VLE or Virtual Learning Environment Project.

According to a recent briefing paper the aim of the Virtual Learning Environment (VLE) Project is to provide TAFE Institutes in South Australia with the technical and organisational capacity to provide significant vocational educational and training programs online to students and departmental staff in South Australia. The VLE will also provide the opportunity to capitalise on the benefits that electronic business process delivery will provide.

Through the development of the VLE every Internet connected computer will have access to online course information, enrolment and payment facilities, learning resources, assessment, feedback and progress reports, and will be accessible anywhere and at anytime.

Students and clients will have open access to online course information using a Web browser and will be able, for example, to:

- register interest in a course;
- apply for admission to a course (or multiple courses);
- receive course counselling;
- confirm enrolments and make secure fee payments
- access resources and online curriculum.

Staff will be able to :

- receive or provide notification to students regarding course waiting lists
- advise students and clients of placement into programs
- provide online courses
- provide information on results and course progress
- manage online enrolments and financial transactions.

The VLE will also provide a wide range of current online technology tools for lecturers, teachers and students, including, for example, online bulletin boards, interactive whiteboards and the publishing and management of course web pages.

The VLE Project commenced some years ago and a number of components have been achieved or are currently being implemented including the web portal which provides access to a wide variety of services for TAFE students (<http://tafestudents.com>) and the TAFE Admissions Service which provides online course information and supports an application process for registration, course selection and notification in conjunction with SATAC, the state's tertiary admissions Service. The delivery of the remaining functions plus others that have been identified since the inception of the VLE Project are the focus of the current activity.

1.3. Torrens Valley TAFE

Commitment to the concept of open or flexible learning has been a cornerstone of the philosophy of Torrens Valley Institute for more than ten years. The Tea Tree Gully campus was developed in the early nineties to provide a new style TAFE College, focussed on student centred, resource based open learning with a flat management structure and self managing work teams. Following the creation of the Torrens Valley Institute of TAFE and a period of consolidation in the mid nineties, Flexible Learning (including the development of key competencies) was again highlighted as one of the Institute's five Strategic Priorities.

The Institute has coupled flexible learning with a commitment to the development of key competencies, believing that these workplace skills in communication, problem solving, team work, learning strategies and self management can best be developed in learning environments which give students opportunities to make choices. These choices need to be based on understanding of their own preferred learning styles and abilities, allied with opportunities to work in an increasingly self directed manner and to practice and develop the skills which will make them valuable employees and lifelong learners. Coupled with an emphasis on skilling students and staff to use technology effectively for learning and as an enabler of business, the emphasis on flexible learning and individual competency is highly relevant to the successful introduction of an integrated knowledge management strategy into the Institute's operations.

During 2002 the management team has participated in a series of planning workshops focussed on the development of shared understandings of change management processes and has identified a number of short term action plans to address areas seen as key elements in our overall progress. These workshops have

refined the Institute's mission and key strategic priorities taking into account the need to improve our business processes in order to deliver better customer service and enhanced learning outcomes to clients.

Chief among the new strategic priorities is Innovation in Learning which incorporates the need for flexibility in learning provision and the commitment to key competencies as well as an emphasis on the development of online learning programs. Web enabled services are seen as a key to achieving this goal. Closely allied to this goal is our commitment to training for new and emerging needs in industry.

The second strategic priority is Partnerships with Industry that emphasises our ongoing commitment to assisting business enterprises to achieve growth through a skilled workforce and to assisting students to gain the employment and career outcomes of their choice. The third priority is Business Processes, which encompasses the development of effective business processes to underpin our ability to deliver training and educational outcomes that surpass the expectations of our clients. Our fourth strategic priority is Our People, which encompasses the commitment to the ongoing development and recognition of our staff through professional development, performance management and career enhancement to ensure that our business continues to grow and develop as a result of their commitment, innovation and energy.

The Knowledge Management strategy brings together elements of all of these goals as it underpins our ability to develop and deliver innovative educational programs, to support our staff through online performance support and e-learning programs. It enhances our ability to provide mutually beneficial partnerships to our business clients as well as individuals and it is an outcome of the integration of supportive and efficient business processes.

2. EMERGING ISSUES

2.1. Convergence of information technology with education

The drive to provide just-in-time, just-enough and just-for-me learning is reflected in the need for information which is also just-in-time and just-enough to support the drive for enterprise survival, job satisfaction and customer focussed performance.

The convergence of content management systems and e-learning with increased technological performance promises to deliver possible solutions but at the present time there is a proliferation of information and far less in the way of clear directions.

The availability of the internet has substantially increased access to information at the same time as its use in education, both formal and informal, has been growing and maturing. There is also an increasing need for organisations, including RTOs such as Torrens Valley to have an online presence to provide information and services directly to customers and internally to reduce duplication of information by providing online information via an intranet instead of through email or printed memos.

Using one source for all documentation also increases the accuracy and reliability of information and ensures that access is available whenever and wherever staff require it for the performance of their duties. The existence of the internet and online web based services has many parallels to the provision of educational services as outlined in the following table.

Characteristics of websites	Comparative pressures in education
The web is a distributed publishing and narrowcasting environment that can be used to inform, promote, market, entertain, educate and train and buy and sell goods and services.	The availability of the Internet within Australian homes and workplaces is steadily increasing and is amongst the highest in the world while the use of the Internet as an educational resource is accepted widely in all areas of Australian education.
A website can contain text, images, animations diagrams illustrations, maps, video and sound, all of which can be manipulated, edited, copied, stored and audited at any time.	The Internet is increasingly being used as a source of information to support personal as well as business interests. Students at all levels see it as a reliable and authoritative avenue for accessing information.
A website is capable of being accessed 24 hours a day, 365 days a year, or when users are interested in 'visiting' it.	Time pressures on the majority of working TAFE students means that learning needs to be provided when it is convenient for the user. Learning which is relevant and delivered when and where it is required is a key element of Flexible Learning.
A website knows no borders – it is global.	Australian VET providers have increased their delivery of education to International students as well as providing courses in a number of overseas locations.
Although a website owner does not usually monitor who is viewing the site at any moment, the total number of times a web site is viewed over any period can be calculated and a number of other statistics can be obtained – eg where users are from, popular times of the day for access, popular parts of the site.	Monitoring the online activity of students can provide valuable feedback about patterns of learning, and can assist in further developments.

A website can be highly interactive, allowing the user not merely to see or hear information but to interact with it and other users via email, discussion groups and various types of forums.	Blended learning, which combines online with other forms of learning and which provides avenues for developing social networks and communications between learners, is increasingly recognised as more appropriate and effective than other methods.
A website can be constructed to allow users to personalise it so that they can see only those aspects of the site that they want to see.	The demand for just-in-time, just-enough and just-for-me learning which supports continuous or lifelong learning can be met through the learners ability to customise the interface and select the information that they wish to receive.
A website does not know a person's race, colour, creed, socio economic status or cultural background.	Issues of access and equity are diminished in the online environment. Technical issues and learning aptitude can be specifically addressed.
A website can provide links to other websites at the click of a mouse button, thereby creating a reservoir of inter-connected information.	Research shows that a resource rich environment which can be developed to meet the needs of a wide variety of learners with particular needs and interests is the most effective in developing both technical and generic skills.
A website can be used by organisations and consumers to order and distribute goods and services.	The ability to select a preferred course as well as an appropriate provider is not limited by location thereby widening the choices available to learners.
A website can enable the secure exchange of money for goods and services.	The processes of course selection, enrolment, payment of fees as well as course delivery can all be accomplished in the online environment.

Adapted from material contained in Steven Smith (2002) Living Websites

What can we learn from the above? In the new Knowledge Economy businesses, including public organisations such as Registered Training Organisations (RTOs), that fail to utilise the Internet to improve ease of access to their products and services, to add value to their products and services and to train their staff adequately, will lose market share to those that do.

Until recently there has been more 'technology push' than 'demand pull' for e-learning but as more organisations realise the potential benefits of delivering more of their training over their intranets and using this service to provide just-in-time learning and performance support this situation is changing rapidly. From the point of view of the training provider there will always be a demand for pre-employment training and for training that is not enterprise driven, as well as demand from small to medium enterprises that are not in a position to invest in their own internal learning system. Increasingly the expectation will be that clients will require this training to be available at times and locations that suit their own needs. The part time worker, the portfolio individual, the career changer as well as those dependent on casual and temporary work will not be able to attend classes that suit the organisation's needs rather than those of the customer. As more people, and particularly the 'generation X and Y' learners, come to expect to use a computer for learning as well as work and entertainment then the demand for online training will grow. Even those courses which have a strong skills development or social aspect will be able to provide much of the underpinning knowledge online, reserving face-to-face time for more intensive skills development and socially interactive activities.

Vocational education providers such as Torrens Valley will need to provide e-learning options to their customers as the norm rather than the exception. Making online learning more widely available will require the majority of professional and support staff to gain greater skills and understandings in facilitating online learning, in the use

of technology and in the development of online learning materials. Professional development will play a key role in helping staff to make the necessary transition.

2.2. E-Learning

E-Learning refers to the use of internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based on three key criteria:

- It is networked which makes it capable of instant updating, storage & retrieval, distribution and sharing
- It is delivered to the end user via a computer using standard internet technology
- It focuses on the broadest view of learning – solutions that go beyond the traditional idea of training to provide ongoing support for on-job performance.

There is a widespread perception in VET that time poor learners, whether in workplace sponsored training programs, studying for their own advancement, improving their career options or undertaking pre-employment programs while perhaps working part time to meet living and study costs, want more access to online courses which can be studied independently at a time and in a location which suits them best.

There are a number of issues that arise around this perception. Even though computer based training has long been provided in information technology based courses, and there is a proliferation of vendor training, tutorials and manuals available online, high demand is still evident for all manner of face-to-face and campus based technology based training. The success of blended learning programs which combine elements of online learning such as content delivery, forums and online class discussion with face to face sessions, workshops and more traditional elements of distance delivery such as video and printed guides or texts provide evidence that many learners still require greater support and guidance than that provided by independent online learning alone to achieve success in their study programs.

Recent research has further indicated that many learners are ill equipped for totally online learning as they lack the necessary research and study skills to be truly independent. Even among accomplished and experienced learners, there is still much to be gained from discussion with fellow students, whether face to face or through an online community. At conferences and workshops people still enjoy the opportunity to meet the presenters and to share knowledge and network with colleagues. Whether this will remain so is well worth considering.

The ability of online technology to provide the right amount of information at the right time to the right person is growing and the concept of learning styles, coupled with the ability of increasingly sophisticated Learning Management Systems to analyse previous learning and provide customised delivery of materials to meet the needs and capability of the individual learner is growing. The generation X learners will be the first that has grown up in a world where the internet has always existed. Already their acceptance of technology and ease in adopting such items as the mobile phone, SMS messaging, teleconferencing with friends and experience of learning online throughout their school lives means they will enter vocational education with an entirely different attitude towards online learning than their predecessors. Lecturers already report that there is a growing expectation among younger learners that learning will be supported by technology and that course content will be available online.

This has profound implications for all Registered Training Organisations as they prepare for the needs and expectations of this new generation. It will no longer be a

matter of the lecturer's or program's choice in providing online options within our training courses but an expectation which we will ignore at the risk of not attracting viable numbers of students to our programs.

Devising systems which can more easily develop online learning materials to meet the diverse needs of students, provide for customisation of courses to meet the needs of different enterprises and capitalise on the skills of the best course ware developers will challenge all providers. The following diagram illustrates the variety of e-learning options that could be considered by providers.

JUST IN TIME	Performance Support Embedded Help Enterprise Performance Support Systems Wizards	Knowledge Management Traditional Knowledge Management Combined e-learning & KM
JUST IN CASE	Classroom replication Self paced courseware Virtual classes	Simulations Skills building simulations Games
FORMS of ONLINE LEARNING	CONVERGENT (Discrete path)	DIVERGENT (Infinite path)

Barron, Tom (Aug 2000) *A smarter Frankenstein: the merging of E-learning and Knowledge Management*. P1-2

It may well be that today the most sophisticated online learning is happening in enterprise based training on company intranets while public education is struggling to make similar courseware available more broadly to pre-employment students, workers in small to medium enterprises and in public sector organisations. Much of the enterprise e-learning happens in large multi-national or global companies and is part of their competitive advantage. Companies such as Microsoft, British Aerospace (BAE Systems) and Deloitte Touche Thomatsu are among those most often cited. Such multinational companies can afford to invest heavily in sophisticated training programs that are delivered to thousands of employees (existing and new) with similar training needs as a result of the services and products that are introduced into the organisation.

Every new technology from film to radio and television has led to predictions of a fundamental change in the way we will learn and the prediction that the teacher will no longer be necessary. Until now they have all been wrong, and why? Because all previous technologies lacked the most essential essence of teaching and learning – the ability to interact with the learner, to provide feedback and to alter the representation to meet the learners' needs. All previous technologies have been one-way.

The other major impediment to the widespread uptake of technology enhanced learning (including early forms of computer based training) has been the cost of programming. Never mind the cost of installing a base of equipment, what has been gnawing at the foundation of every promising new technology has been the cost of developing and producing enough engaging and up-to-date content to meet the demands of increasingly sophisticated learners and the constantly changing training needs.

With the development of the concept of learning objects and the increasing capability of computer based technology we may at last be close to realising the promise of technology in learning.

2.3. Learning Objects

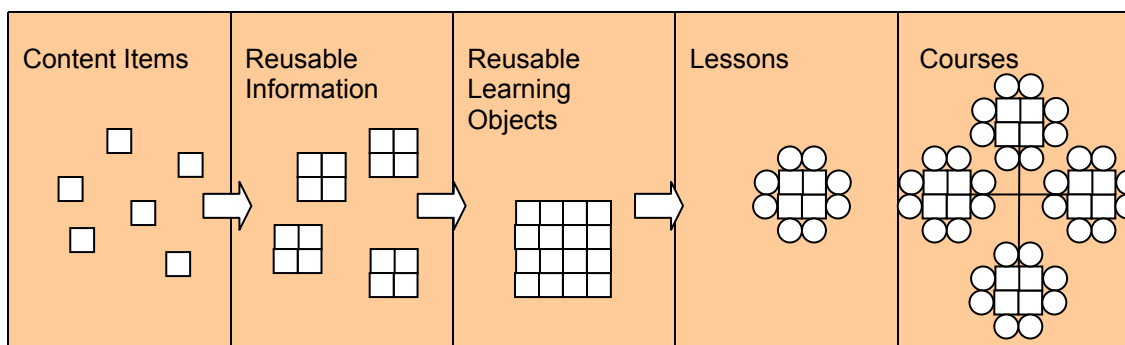
For some time now the fact that the development of online courses has not been accepted as widely by teaching professionals as the early innovators would have predicted has puzzled many observers. Reasons range from the preference of educators for materials that they have personally developed to the cost and difficulty experienced by many as they struggle to cope with programming in unfriendly environments and technology which seldom seems to perform as expected. Predictions of thousands of eager self directed learners have not eventuated and many organisations that thought to make profits from the easy delivery of online programs in a global market have been disappointed.

The latter difficulty seems harder to understand when one considers the great proliferation of similar courses, whether world wide or in the Australian VET system. National training packages, or curriculum in other sectors, mean that the content of much of what we teach is common in many organisations but little in the way of learning resources are shared between organisations. While issues of intellectual property and copyright may explain some of this the general lack of shared learning materials continues.

In this scenario the idea of reusable or sharable learning objects has appeared as a potential solution. The idea is simple – rather than developing expensive and hard to modify courses, learning objects would be developed, stored in a shared area and reused to create a continuing variety of materials. Potentially content could be re-used in different courses or different formats, even modified to suit the learning styles of students more rapidly and more cost effectively than whole courses. When one considers the scarcity of subject matter experts with appropriate levels of technology know-how and instructional design capability the idea is undisputedly alluring.

Unfortunately the reality is not as simple as it would at first appear.

In its simplest form a learning object is just a small piece of content, self contained and independent of other learning objects. However there is no universal agreement on what actually constitutes a learning object. Some writers contend that an objective, information or content, an activity and an assessment must all be present for something to be a “learning” object. Others want to impose a certain size, such as 15 minutes of learning activity, on learning objects. Still others want to identify ‘content items’ as the smallest or most granular level which are then combined with metadata descriptions to create ‘reusable objects’, with a learning objective to create ‘reusable learning objects’, and finally with activities and assessments to create lessons and courses as in the following diagram.



Ron Oliver contends that three types of learning objects exist – content objects, learning activities and learning designs – which can be combined to create learning sequences and courses. Educators will recognise much that is familiar in the model that Oliver describes as they will easily correlate this to their experience of searching for specific examples of content in texts, video or other formats, combining it with a range of activities such as discussions, role plays or simulations and fitting it into a framework of explanation, direction, reflection or assessment to create a workshop or class experience. By translating this idea to an online environment, most teachers can see the possibilities for reusing content and activities in different situations, such as substituting one case study for another, or using a quandary set up in different contexts.

There is a great deal of inherent appeal in the idea of reusable learning objects. The developer can create materials once and then store them for re-use, customising materials over and over again by changing the activities or the content, and benefiting by sharing the materials developed by others. For the organisation the benefits include faster deployment of learning materials, materials that can be more easily updated or customised for a particular client's workplace, reduced content development time and costs, and the ability to more easily use materials within a Learning Management System.

The student benefits from materials which can be customised to support their particular learning style (more graphics, appropriate language, challenge testing, more or less interaction) and which provide just enough, just in time learning and performance support.

At the simplest level any lecturer will be familiar with the experience of returning to materials that have been used previously to update them, extract some content and modify or change it for use with another group of learners. All that is required is a file management system that the lecturer understands, access to the new content and the time to adapt it.

The difficulties with learning objects arise once they are required to be stored, shared and reused. Some form of indexing or tagging is required to ensure that the required learning objects can be located when needed, the indexing needs to suit all users not just the original creator and the object must be fully independent of other materials. Once materials have been reused, and perhaps modified, the system must be able to identify not only the original but also variations and new versions.

Much time, effort and thought has been put into devising standard ways of describing learning objects, creating taxonomies of headings and trying to conceptualise all of the individual elements that might be required by a potential user. A number of metadata schemes have been developed from the relatively basic Dublin Core

Scheme of fifteen elements to the much more detailed IEEE, AICC and SCORM versions.

In the United States and Canada the development of shared repositories of learning objects has advanced significantly further than in Australia but most are targeted to either the school market or to higher education. In Australia there are a number of current initiatives including an examination of the ways in which the ANTA Toolboxes can be adapted to be used within SCORM (Shareable Content Object Reference Model) compliant Learning Management Systems (LMS) as well as with the ANTA Resource Generator. These activities support the greater interest in the use of learning objects and the increased availability of LMS such as Janison's Toolbox that are capable of utilising learning objects as both discrete and aggregated items (an example would be test or survey questions which can be viewed and selected as discrete items and also as complete tests and surveys made up of a number of the individual questions).

In organisations such as Western Australia's WestOne and Tasmania's Discover Online the use of templates in WebCT has been combined with the 'chunking' of material into learning objects to enhance the delivery of online courses and to enable teachers and lecturers to more easily adapt and modify courses either to suit a particular learner's needs, to include diverse materials or to suit the preferred learning styles of students and delivery preferences of the teachers.

The idea of reusable and interchangeable learning components has been adapted by some of the lecturing staff at Torrens Valley TAFE who have developed a series of courses and WebCT communication hubs using icons and templates developed by our WebCT co-ordinator and the graphic designer who is part of the SmartMedia Unit that provide technical expertise in materials development to support learning programs, marketing and information provision. A group of staff are currently experimenting with the use and customisation of toolboxes and have been assisted in this by the staff member from SmartMedia who is responsible for web maintenance and WebCT programming. These activities will be instrumental in Torrens Valley's ability to make full use of the LMS chosen as part of the TAFE SA VLE Project and efforts to keep staff informed about this project and its ramifications have already commenced.

2.4. Standards and interoperability

SCORM, IMS, IEE, AICC – metadata, XML, wrappers, reusable learning objects - the list of acronyms seems never ending and the terms constantly changing. Essentially from a management perspective, standards are what allow web developers, content creators, computer engineers and others to create new web pages, online courses and new electronic devices knowing that they can communicate electronically with other devices and operate in Learning Management Systems that also meet those standards.

Arising originally out of the defence industry and their need for standardisation and compatibility not only in weapons, transport and communication systems but also in the training required to operate them, these standards are now becoming more widely known and accepted.

Putting objects "on the internet" does not necessarily make them available to others. General web search tools are too broad, and a simple search returns too much information rather than too little. Finding objects is a two part process: first objects have to be indexed or "tagged" with metadata that identifies the object, its location and describes the object with sufficient detail that an online search will result in its

discovery. Too little information in the tagging will result in too many unsuitable results. Essentially the objects have to be capable of being 'found' by the search engine or the user.

In education, metadata standards that describe learning materials allow them to be discovered when required. The original Dublin Core (DC) metadata scheme aimed to be minimalist and has only fifteen elements so a range of other schemes have been developed to provide further refinement and objective description until, with IMS, we have a scheme of some eighty-six elements. Metadata is essentially like the information on a library catalogue entry or the label on a product that describes the item under a set of required headings. An item in the library collection will be described under headings such as author and title, a grocery product will list ingredients, the manufacturer, weight, use by date and so on. In the same way metadata schemes use a standard format of title, author, location, creator, date, format, with further qualifying elements to precisely describe the item.

In Australia the EdNA metadata standard is suitable for general resource discovery but not for learning objects. The AShareNet scheme as well as the School's Online Curriculum Content Initiative (now known as the Le@rning Federation) have all developed extensions to the basic DC and EdNA Metadata schemes to more extensively describe learning objects. TAFE NSW has adopted the IEEE Learning Object Metadata (LOM) model for describing learning objects within their system.

Future developments in Australia will be hindered unless an agreement on a common standard to allow interoperability can be developed. This fact has been recognised by FLAG and projects focussed on interoperability and the feasibility of an Australian learning object repository are planned as part of the Australian Flexible Learning Framework under Strategy 2003.

Internationally SCORM, the IEEE LOM and the IMS initiatives are already working closely together to reach agreement under what is known as the Open Knowledge Initiative (OKI). For an example of what is achievable through the use of learning objects and standards based design and interoperability it is worth looking at the Tutorial on SCORM available at http://www.math.tamucc.edu/SCORM1_2/home.html Developed by Dr Edward R Jones, this example of interactive training provides for different levels of training in understanding the SCORM standards for different client groups through the use of a learning object based online tutorial.

To successfully utilise learning objects requires three components; the content, the metadata or description of the object and a Learning Management System (LMS) for the management and delivery of the online learning program. The key functions of a LMS are to

- manage courses and programs
- provide and administer course registration
- track student registration, access and progress
- provide course scheduling and administration including instructors and physical facilities
- manage learning administration and reporting
- enable financial tracking and control of learning.

The following table provides a summary of some of the primary features of a LMS and can be used to determine the suitability of a particular system against defined requirements, although a more detailed breakdown will be needed to adequately determine functional capability. Different organisations and settings will require some or all of these features and may have additional requirements that will need to be included.

Learning Management Features			
Manage courses <ul style="list-style-type: none"> • Instructor led • Web based • Own product • CD-ROM • AICC • IMS • Prerequisites • Sessions • Pricing 	Manage programs <ul style="list-style-type: none"> • Program definition • Flexible structure • Alternative components • Prerequisite testing • Certification 	Manage resources <ul style="list-style-type: none"> • Facilities • Instructors • Materials • Instructor eligibility 	Learning catalogue <ul style="list-style-type: none"> • Single catalogue • Multiple catalogues • User configuration • Categorisation • Grouping • Searching • Calendar integration
Competency Profiling <ul style="list-style-type: none"> • Competency profiles • Job/Role profiles • User profiles • User assessment • Skills gap analysis • Organisational models • Succession planning 	Enrolment <ul style="list-style-type: none"> • Automatic • Self-enrolment • Batch • Manager Approvals • Configuration Approvals • Max/Min attendances • Waiting lists • Discretionary pricing 	Reporting <ul style="list-style-type: none"> • Course administration • Enrolment • Instructor • Student results • Audit logs • Financial • Customisable 	Commerce <ul style="list-style-type: none"> • Payment processing • E-commerce link • Budget tracking • EDI
Tracking <ul style="list-style-type: none"> • Enrolment • Progress • Scores / Grades • Results • Financial • Personal • Instructor 	Workflow <ul style="list-style-type: none"> • Tasks • Notification of events • Between users • Automated 'to do' process 	System Security <ul style="list-style-type: none"> • Roles • Permissions • Profile • User defined 	Integration <ul style="list-style-type: none"> • Student records • Course records • Results • External enrolment requests

Learning management Functional Matrix (2000) eLearnity Limited

As well as reviewing the functional requirements there are many technical considerations associated with selecting and deploying an appropriate system. The following technical matrix can be used for determining LMS options, with a more detailed analysis required to determine the best product architecture and deployment model. The LMS is a critical component of any full-service environment and needs to be managed and implemented in the same way as any other major business system.

Technical environment			
Architecture <ul style="list-style-type: none"> • Single server install • Multi Server install • Distributed LMS • LMS Synchronisation • Own content delivery • Own Directory 	Deployment <ul style="list-style-type: none"> • Scalability • Performance tuning • Load balancing • Resilience • Mobile capability • Pre-built ERP links • Languages 	Hosting <ul style="list-style-type: none"> • Hosting version • Centralised management • Domain configurable • Host/ASP available 	Customisation <ul style="list-style-type: none"> • Logos • Look and feel • Course forms • Student forms • Security • Approvals • Student navigation • Reports

Technical environment			
Infrastructure <ul style="list-style-type: none"> • Server OS • Server spec • Web server (WS) • WS interfaces • Database • Client • Plug-ins/java script 	Pricing Model <ul style="list-style-type: none"> • Named user • Concurrent user • Server pricing 	Help <ul style="list-style-type: none"> • Online • Context sensitive help • Wizards 	Support <ul style="list-style-type: none"> • Help desk • In-depth technical support • Consulting services • Training services • Maintenance

Learning Management Technical Matrix (2000) eLearnity limited

2.5. Knowledge management

The concept of Knowledge Management involves the electronic storage of a company or organisation's accumulated information into an integrated and well organised Records Management System as well as the development of mechanisms for the continued addition of new information. The purpose of this effort is to provide reliable and accurate information to support the performance of the organisation through access to reliable and consistent information. At its best such a system will provide employees, clients and suppliers with the information they require in the desired format on demand.

To understand this concept it is useful to think of a call centre analogy – whether at the level of telemarketing of a standard range of goods or more detailed products and services. It should be recognised that this concept does not preclude the same system from supporting staff in face-to-face dealings with customers. Supported by a well organised databank of online information the call centre operator is equipped to answer the majority of customer calls. Quick access to a series of screens enables a tele-marketer to deliver their company's latest offer to the potential customer, answer standard questions and, on an associated form, enter all of the details of the customer's order, preferred payment options and delivery instructions. The online form can then be relayed directly to the order and despatch staff for selection, packaging, addressing with the automatically generated label and sending on its way.

At another level the online marketing staff employed to call regular customers with the latest offers will have a complete buying history available to enable them to provide the exact mix of information which is likely to persuade a customer to place another order. Yet again, when you have the need to call your insurance provider to place a claim they will be able to access information on repairers, the ones available in your area, the allowable cost for the repair and the effect on your personal re-insurance premiums.

Imagine transferring this same level of company information into the hands of your staff and customers? Information on courses, fees, learning options including facilitator led or independent learning options, skills recognition processes as well as counselling and learning support are all available. Staff requiring information on policies and procedures need only access the online information via the intranet to have all that they need instantly available.

Knowledge Management has most commonly occurred at the higher levels of strategic thinking in large organisations but less often in small enterprises or at the operational level. With an increased expectation of staff to work more autonomously and with a need for increased access to information to support effective performance at all levels, Knowledge Management systems are more likely to be provided on an

enterprise wide basis. Access rights, permissions and approvals can be used to determine what information is available, which can be 'read only' and which can be modified.

It is the application of these principles to all levels of information access that makes the concepts applicable to Torrens Valley TAFE and many other public sector organisations. The ability to use information management to underpin improved performance and outcomes for clients centres on ideas about who controls the information. Making information accessible to all staff means that much leverage can be obtained from information management in the first instance by using what we already have. Jack Welch is reported to have said of General Electric "If only we knew what we know"

Developing a culture of content management and information sharing including the sharing of learning materials development is much more critical and a longer term goal. In the first instance providing ready access to the information which people need to do their jobs efficiently will be a significant achievement.

Starting where people are now, adding to the system gradually and encouraging a culture of collaboration in the sharing and development of online learning materials will be enhanced by a LMS that is easy to use, intuitive, which interfaces with a number of proprietary applications and which allows for editing within the application instead of through cumbersome html programming.

2.6. Pressure for collaboration

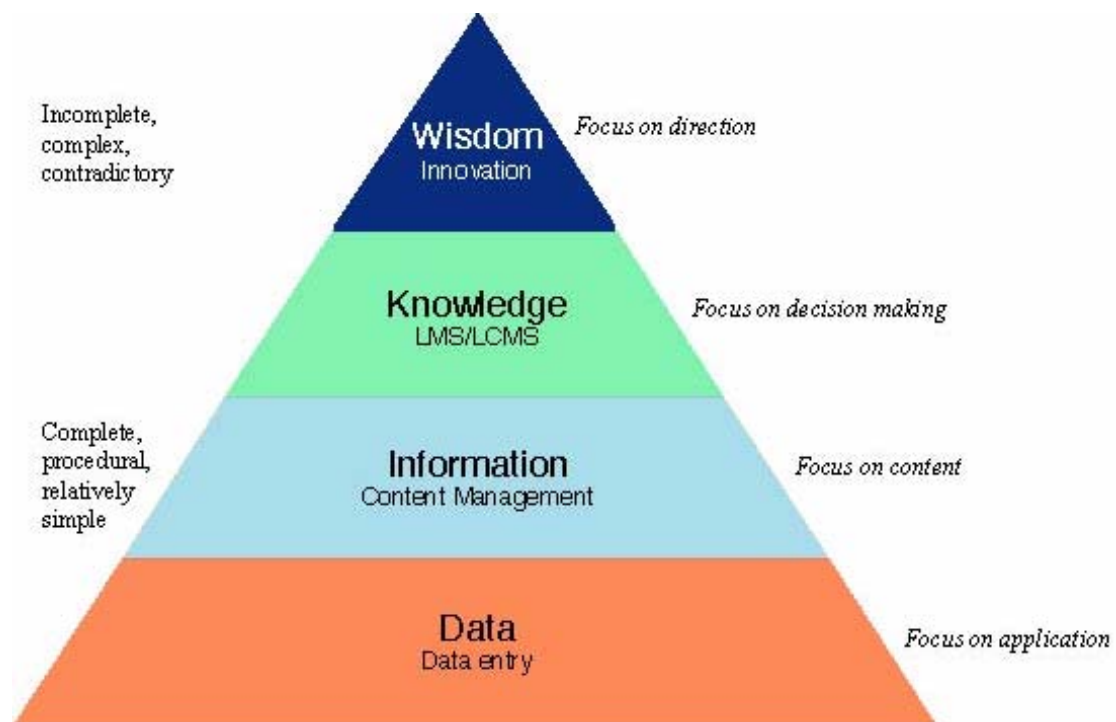
One of the critical factors facing organisations is the pressure on their staff, increased workloads, downsized staff allocations, customer expectations and budget limitations means we are all expecting to do more with what we already have. In the past the promise of improved efficiency through technology has been often cited but seldom delivered. Improvements to Learning Management Systems especially in terms of content development, the provision of portal services as well as the increased reliance on computers for our daily work have all combined to bring the promise much closer to reality.

The primary objective of a Learning Management System (LMS) is to manage learners, keeping track of their progress and performance across all types of training activities. By contrast, a Learning Content Management System (LCMS) manages content or learning objects that are served up to the right learner at the right time by supporting creation and storage of learning objects, their recovery and use in particular configurations and the customisation of these into particular formats to suit various web enabled devices from computers to palm and wireless technology.

Knowledge Management on the other hand requires that something be done with the information to create new understandings, knowledge or application. If the system merely concentrates on storing information and capturing people's knowledge into the system then it is no more than an information management process. Maintaining interaction with the information as the basis for creating a culture of continuous improvement and innovation is critical.

To sum up, in a simple way, information or content management (CMS) combined with e-learning through a Learning Management System (LMS) equals a Learning Content Management System (LCMS) but it is only when this is combined with systems that support and encourage collaboration and the application of the information that we achieve Knowledge Management.

These concepts are illustrated in the following diagram.



The diagram summarises the ways in which different forms of information are used at different levels within an organisation. At the base we have data that is often procedural, structured and directive and which is used in an operational context. At the information level the content is more extensive but still largely prescriptive with the focus being on tactical decisions between available strategies. The knowledge level requires a focus on application and strategy, including determining what decision should be made and at this level information is often incomplete or needs to be collated and combined. The highest level is the most complex and the information at this level is frequently unclear, even ambiguous, the focus is on the vision or which direction to take, rather than how it will be accomplished. Most people in today's workplaces operate at a number of these levels although the amount of time devoted to each varies with the level of responsibility.

In the past Knowledge Management Systems were primarily available to the upper and more strategic levels of an organisation with document management and online training or e-learning confined to the operational levels. Modern organisations that are often characterised by flatter or less hierarchical management structures, have a greater need for access to information by staff at all levels of the organisation. In industries where the work is highly specialised and knowledge dependent the potential advantages of an organisation-wide Knowledge Management Strategy are likely to be the greatest. Vocational education and training is an industry where the application of specialised knowledge and skills is required at all levels to achieve successful client outcomes through flexible online learning. In a similar way the increasing sophistication of e-learning capability means that online training can be provided to all levels through simulations, the presentation of ethical dilemmas and quandaries or interactive and collaborative learning options rather than online training that is limited to the procedural and prescriptive.

2.7. Creating a vision

To make the scenario described at the beginning of this report happen in an apparently effortless manner the initial customer contact is supported by a knowledge management strategy which creates a comprehensive system of online information that enables staff to provide accurate and timely information about courses and services, integrate services from education teams and support services and complete business processes speedily and efficiently. The delivery of training is enhanced by a Learning Content Management System that enables staff to provide rapidly customised learning materials, that enables them to deliver these when and where the client requires and that facilitates effective communication between learners and teaching staff (and others where appropriate). The system eliminates much of the duplication of effort and supports staff and students in a collaborative, knowledge generating environment where access to information when and where it is needed, in a variety of appropriate formats, allows the creative processes of teaching and learning to be fully realised.

Access via a web browser for both staff and students enables many aspects of the education process to be integrated with information about clients, details of services that are available and e-commerce capabilities that increase business efficiency.

Many aspects of our business can be rendered more efficient and effective through the integration of our systems into the one environment as the following examples demonstrate.

Course Information Services The Torrens Valley TAFE website provides information about course requirements, online study options, class times, challenge testing, enrolment forms and course costs online. Potential students can access the information on a 24/7 basis and can complete an online registration that is then processed against standard selection criteria before a place is offered, the registration added to a waiting list or the client is advised of alternative courses for which they are eligible. Enrolled clients can undertake intensive front-end training to cover basic issues, receive a customised course depending on areas of need, and determine alternative study options for ongoing development of skills.

Counselling Online As part of the Institute's Customer Service Strategy online counselling is provided to potential students to allow them to obtain personalised career and course guidance, and assistance with information on financial support, accommodation, learning support, concessional fees and study grants. This is available before enrolment and also during the study program. Learning Support is provided via study aids as well as from skilled professional staff.

Customer Service Strategy All information to support staff in providing information is online and can be accessed readily. Grants available, past history with this client (eg has had two previous trainees, we are currently providing onsite training in Retail Operations and Frontline Management coaching to a new supervisor), as well as details of courses can be accessed on line. Staff can enter details of questions and queries as they arise into a database where they can search previous answers and locate contact details of staff members who are most likely to be of assistance. The resulting FAQs provide support for future queries. Integration of services from course inquiries to employment placement ensures that support is available for the entire time that a client spends with our Institute. The system also provides e-learning support for staff through a series of online courses that are fundamental to the building and maintenance of on-job performance. These courses are free to staff as part of the Institute's Human Resources strategy and are designed using learning

objects in small components that can easily be accessed as ‘refresher’ training or on-call to support job performance.

Support for Learning Facilitators Lecturing staff can call up a library of previous training materials, select appropriate courses, substitute case studies or other activities that are more relevant to the employees situation, scan existing challenge tests, select the one which most closely matches the clients area of study, delete inappropriate items and add selected alternative new items from a bank of learning objects. Where clients have undertaken a previous course, their academic record and skills profile is available. Customised learning materials are incorporated into the selected template of instructions and ‘help’ options and dispatched via email to the client. A telephone call from the facilitator a few moments later confirms that the materials have arrived, welcomes the student and serves as an introduction to the facilitator and the online help options.

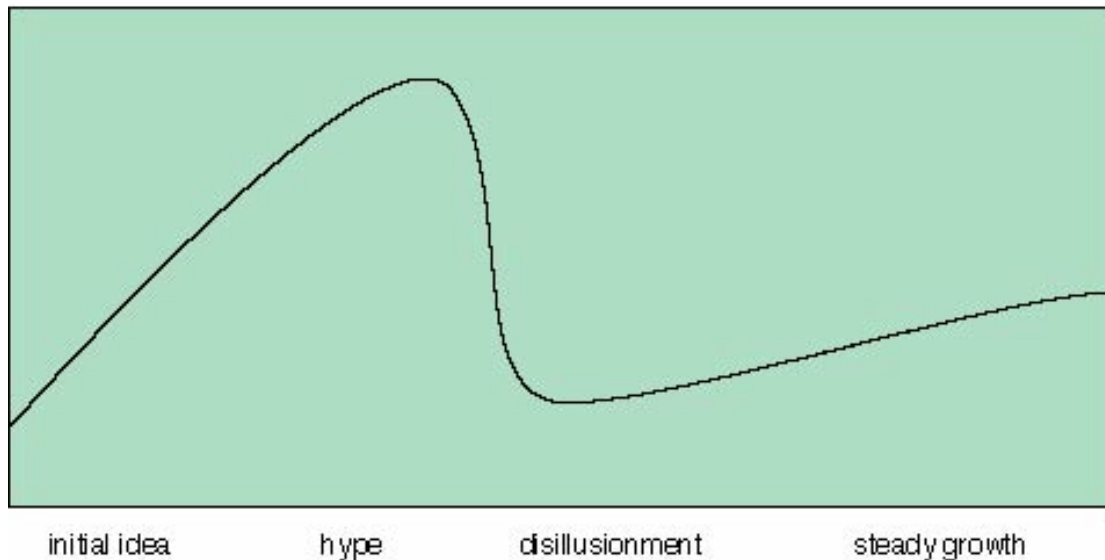
Access to a comprehensive and integrated solution brings real benefits to the organisation in the way it conducts its business but has parallel benefits for staff as well.

Benefits to the organisation and its staff	Benefits to individual staff members
Creates a common culture and processes across the organisation	Develops competency in critical core and organisational skills
Makes better use of employee’s time	Supports problem solving and decision making
Improves employee performance and productivity	Unlocks creativity and innovation
Supports change processes by providing information on demand	Improves and demonstrates personal productivity and performance
Facilitates communication with customers, suppliers and partners	Supports coaching processes
Facilitates collaboration across the organisation	Builds greater understanding of strategic directions and priorities
Supports project teams and initiatives	Provides opportunity to participate in innovative activities and gain increased skills
Strengthens the ability to attract and retain employees through access to learning and development activities	Facilitates induction of new employees or staff moving into new positions
Streamlines and enhances other training initiatives	Enriches and reinforces learning from other forms of training

Technology uptake – hype and disillusionment

The introduction of any new technology or concept follows a similar path. Initially there is rapid escalation of interest in the potential of the new technology. Researchers, developers and early adopters speculate and initiate numbers of attempts to adopt the new ideas. This period is inevitably one of difficulty and setbacks as problems and issues surface, like the too early delivery of a beta version much of the use is frustrating and fails to deliver on the initial expectations. This period leads to a rapid fall in interest, but this lowering of expectations can, if the initial concept is indeed valid, be followed by slower more sustained growth and the gradual achievement of real benefits.

The Hype Cycle



Time scale

Lim David and Klobas, Jane (2000) *Knowledge management in small enterprises Electronic Library* Vol 18, No 6, MCB University Press pp420-432

According to the Gartner Group (2000) “The hype cycle is a technology life cycle phenomenon ... where an emerging technology trend first rises along a huge wave of over-blown expectations and hype. Misinterpretations, failed adventures, confusion, taxing learning and re-learning will finally burst the bubble of euphoria, gradually bringing the fledgling technology down to earth, along with an associated feeling of disillusionment. And that’s when the real work, application and development start – a time of steady implementation and gradual productivity realization.”

So – are we at the height of hype? Or are we at the beginning of the period of steady growth?

With both learning objects and knowledge management I believe we are about to see the start of the steady implementation of these ideas into education. There has been much hype but there have also been a significant number of advances with the use of Knowledge Management Systems in large organisations and successful experimentation with learning objects in organisations such as Cisco whose academy courses are built on the concept of learning objects. Standards and technology are now at a stage which will allow for more mainstream adoption of these ideas. Staff can use the Knowledge Management System as a constant source of performance support to help address on-the-job problems, unfamiliar processes or to facilitate career progression and professional development.

Many players are entering the LCM /LMS field and new products are appearing almost overnight – Brandon Hall recently identified over 100 systems in use or under development compared with the 29 systems which were reported in his publication in November 2001. Gartner (2002) warns that there is at present, no clear leader. Canadian, British and Australian products are also beginning to appear and the time is right to commence thinking about these systems which promise to make integration of process and delivery so much more attainable in education. Government involvement in such projects as the schools Le@rning Federation project to develop a collection of online learning objects for use in all States and Territories is a further indicator of the maturation of this concept. The marrying of learning objects with content management to create integrated systems to support

both administration and education including in-house training of staff is a concept worth pursuing.

Features of LMS or LCMS are described in more detail in the second part of this report which also contains detailed descriptions of a small selection of leading applications as examples of the features which can be provided.

Many times when an online learning course is provided it does not suit all the learners – for some much of the information is already known, for others too much prior knowledge is assumed. The pace of delivery in a traditional class may be too fast or too slow, there may be too much interaction or too little, some students enjoy working in groups while others prefer a more directed or independent approach – it is hard to suit everyone. Online learning which can be personalised can address each of these issues – prior learning, learning styles and learning ability can all be addressed through the judicious choice of appropriate learning activities, challenge tests, self paced and collaborative options.

Personalised learning can be stored on the learner's own computer or network file so that they can track their progress and return to their own insights and learning strategies if and when the need arises. Unlike the linear course with modularised learning based on small self contained learning objects the learning can indeed be just-enough, just when I need it.

3. CHANGE MANAGEMENT STRATEGY

Lasting change is not achieved in one cataclysmic process but is rather the product of sustained and continuous activities that constantly improve and maintain market share based on sound principles, ethical business practices and a focus on core business. In this light the changes outlined in this report are designed to build upon the existing practices of our Institute and to position us for future growth by increasing our ability to respond to customer demands, to improve the efficiency of our business and to reach a wider market through online access to information and educational programs.

3.1. Theories of Change

According to the Harvard Business review there are two theories of change – Theory E focuses on economic value while Theory O focuses on organisational capability. Theory E is more common in the corporate environment where the financial bottom line and return to shareholders is the dominant driver. Theory O is more common where emphasis is placed on employee commitment. While a combination of approaches is common, swinging between the extremes must be avoided.

Dimensions of change	Theory E	Theory O	Theory E and O combined
Goals	Maximize shareholder value	Develop organizational capabilities	Explicitly embrace the paradox between economic value and organizational capability
Leadership	Manage change from the top down	Encourage participation from the bottom up	Set direction from the top and engage the people below
Focus	Emphasize structure and systems	Build up corporate culture: employee's behaviour and attitude	Focus simultaneously on the hard (structures and systems) and the soft (corporate culture)
Process	Plan and establish programs	Experiment and evolve	Plan for spontaneity
Reward System	Motivate through financial incentives	Motivate through commitment – use pay as fair exchange	Use incentives to reinforce change but not to drive it
Use of Consultants	Consultants analyse problems and shape solutions	Consultants support management in shaping their own solutions	Consultants are expert resources who empower employees

Adapted from Beer, Michael, Nobria, Nitin (May-June 2000) *Cracking the code of change* Harvard Business Review p137

3.2. Organisational priorities and structure

Implementing the vision described above at Torrens Valley will be achieved progressively over the next eighteen months to two years.

The early stages will involve a re-structuring of management responsibilities to bring together elements of the organisation that are seen as critical to the implementation of the key strategies.

A recent re-examination of the strategic priorities that have been in place for the last three years has led to a refinement of these into a set of priorities that will serve to position the Institute for the next 3-5 years. The focus will be on continuing innovation in learning that is supported by appropriate business processes and capable people and accomplished in partnership with industry, government and the community.

The creation of an e-learning strategy is planned as a key stage of implementation. This will involve the creation of a single unit bringing together the staff currently responsible for web-development and materials production with the flexible learning team, the online learning coordinator and a research officer. The formation of this unit will be accomplished through a series of facilitated workshops and planning sessions conducted congruently with the Institute's annual planning process.

3.3. Communications plan

The success of the e-learning strategy will be dependent upon a well structured internal communications plan to inform and motivate staff to adopt the e-learning strategy. This plan will make use of existing structures and planned activities supplemented by regular face-to-face, email and print communications.

The Reference Group created during the action and research phase of the Fellowship will be utilised to assist with development and distribution of these materials to all teams across the Institute.

Regular events which will be utilised include the Management meetings, Management forums, Academic Forums, Administration Network Meetings, the home page of the Institute intranet (which provides online news bulletins), the internal Torrens Times newsletter as well as meetings of regular Standing Committees such as Innovation in Learning and Business Processes. It is envisaged that the Knowledge Management group that was formed to act as a reference group to this Fellowship and which has overseen several interim projects, such as the redevelopment of the Institute Intranet, will continue.

3.4. Technology infrastructure

The Institute's Information Technology plans include a five year development strategy as well as annual plans for technical architecture and hardware and software upgrades. The Institute's IT Unit has a strong commitment to supporting the educational directions of the Institute and has embarked on a major redesign of our network structure to enable students and staff network access via the internet through the creation of a virtual private network (VPN).

This capability will significantly increase our ability to offer online learning and to support students and staff working online. It is critical that access to our network is provided to enable staff engaged in content development to access a repository of

learning objects, templates and associated content and tools to easily and conveniently prepare learning materials whether on campus or not.

The computing equipment and server applications required for this development have been acquired and installed and it is expected that remote access to files stored on the Institute network, which currently reside “behind the firewall” will be made progressively available during the next six months. This will provide far easier access firstly for staff and then once operating successfully, for students. Staff access to the network from remote locations will enable staff to have access to their working ‘desktop’ from any location provided they have internet access and will greatly assist in the development and provision of online flexible learning as all files - documents, applications, email, communications tools, subscription services and internal linkages - will be readily available.

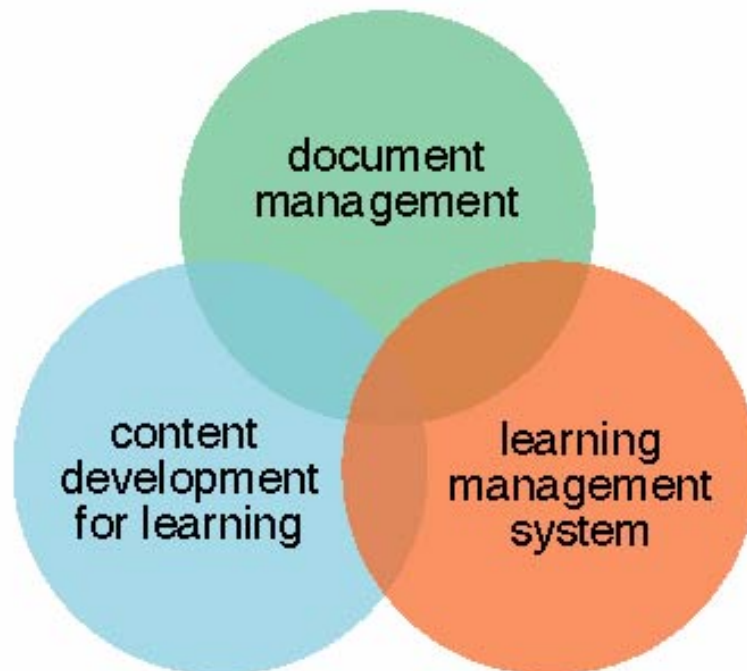
3.5. Management involvement

Involvement of the Institute’s Management Team will be critical to the success of this strategy. The team based nature of our Institute, with managers who are part of the Management Team but also responsible for operational teams makes for effective communications but is dependent on a collaborative approach for its success. The ability of managers to both act as advocates for their teams but also to be able to see the big picture when required to make decisions affecting the whole Institute is a critical skill.

The very nature of a shared repository and commitment to knowledge management is collaboration. Accommodating the natural inclination of managers and staff to want to retain their own local information and resource services will be a significant challenge. Means of recognising and rewarding those who share will need to be developed.

The following diagram represents the essential elements of the Knowledge Management Strategy – document management, content development for learning and a learning management system – which are all integrated with our existing State level student management, human resources and finance systems and which can provide information via a suitable interface to web-enabled communication devices via a browser interface.

Web enabled communication services which interface to multiple devices



Integration with Legacy systems

4. PROJECTED DEVELOPMENTS

4.1 Staff Capability

GOAL

To ensure staff have the skills to provide flexible learning options, including e-learning, to Torrens Valley clients, whether individual students or enterprise based

- teaching staff will have the commitment and capability to provide educationally sound e-learning options,
- managers and educational staff will be trained in providing consultancy services and training strategy advice to enterprises,
- learners will be provided with appropriate learning experiences.

Key tasks		
Objective	Strategy	Responsibility
Provide information on e-learning to managers and teams	Develop documentation of e-learning benefits, strategies.	Flexible Learning team
Include e-learning in strategic priorities	Develop 5 year plan for revised Strategic Priority of <i>Innovation in Learning</i> . Develop specific objectives to be targeted in annual plan	Assistant Director and selected team
Professional development of educational staff	LearnScope projects in e-Facilitation and Toolbox implementation (evaluate and extend for 2003). Basic computing (eg ICDL) training provided. WebCT (or other LMS) training	Project teams Computing faculty, HR
Professional development of managers for industry liaison	Consultancy skills development for Managers and key academic staff	HR, consultant
Communication and implementation process <ul style="list-style-type: none"> □ Incorporation of goals and strategies into annual planning process □ Development and dissemination of information to educational teams and support staff □ Academic Forums and other events used to promote successful strategies. 		
Outcomes and performance Measures <ul style="list-style-type: none"> □ increased provision of e-learning options to clients □ % of courses which provide e-learning options □ > 80% satisfaction level from students and enterprises for appropriate measures on client satisfaction survey. 		

4.2 Online content development

GOAL

To increase our capacity to provide customised learning materials to enterprises and individuals in a timely and efficient manner, by

- ensuring that staff are provided with a suitable learning object and standards based platform for the development and delivery of online learning.
- providing for the storage and sharing of learning objects and online course materials between educational staff, both within programs and across faculties.

Key tasks		
Objective	Strategy	Responsibility
Ensure staff have the expertise for effective online learning.	Provide staff with training in the use of WebCT or other LMS Provide professional development activities in facilitating online learning	HR, Flexible Learning team
Increase access to existing online materials from various sources	Provide copies of Toolboxes and other online content to support program delivery	Educational teams Flexible Learning team
Select an appropriate Learning Content Management System	WebCT / or other LMS	Flexible Learning team, VLE Project team (TAFE SA)
Develop a Learning Object repository	Provide shared area within IT network for storage of learning templates, icons, content objects. Develop icons, templates and learning objects	IT Unit, SmartMedia
Recognise staff who undertake innovation in learning activities	Organise staff forums and celebrations to promote innovative activities	Flexible Learning team
Target courses which are appropriate for online delivery	Include requirement for online delivery in annual planning guide for educational teams.	Innovation in Learning Plan 2003 (Assistant Director)
Communication and implementation process <ul style="list-style-type: none"> □ Academic forum – September 20th 2002 □ Management forum – September 3rd 2002 □ (FL)exhibition – October 2002 □ Annual planning process 2002/ 2003 □ Email and intranet – as required 		
Outcomes and performance Measures <ul style="list-style-type: none"> □ Increased number of online courses or courses with an online learning component. □ Inclusion of targets and strategies in Annual Plans for 2003 □ Professional development activities available to staff 		

4.3 Content management strategy

GOAL

To develop a content management strategy which incorporates

- online access to policies, procedures, forms and supporting documentation,
- content development and delivery within a Learning Content Management System
- support for the development of online collaborative networks and communities of practice.

Key tasks		
Objective	Strategy	Responsibility
Implement a web enabled LCMS for learning content development and delivery	Participate in VLE and LMS selection committee. Undertake pilot projects to develop capacity to implement once a system is acquired	Assistant Director Manager Finance
Implement a Content Management Policy	Develop policy for TVT which is consistent with DFEST requirements	Manager Quality & Planning
Implement the PETAL (Policies – easy to access and locate) Project	Undertake trial of DocuShare software with TAFE Biz for AQTF Standards	Manager Quality & Planning Knowledge Management Group
Ensure web systems are integrated and compatible	Expand and integrate the content management capabilities of the intranet and internet. Ensure websites are XML and standards based	Knowledge Management Group
Develop portal services for staff and students	Purchase portal server, implement network access and associated services	IT Unit
Support development of collaborative practices	Provide support for the development of communities of practice. Provide access to shared repositories of learning materials.	IT Unit Flexible Learning team Knowledge Management group
Communication and implementation process <ul style="list-style-type: none"> □ Email □ Annual Planning Process □ Management Forums □ Administration Network meetings 		
Outcomes and performance Measures <ul style="list-style-type: none"> □ Integration of database services to support Intranet and Internet □ PETAL project outcomes implemented (access to policies and standards to support AQTF audits) □ Portal services enable staff and students to access Institute network via a web browser. 		

4.4 Customer service strategy

GOAL

To implement an integrated customer service strategy that provides an improved service to clients from initial enquiry to employment placement and which includes appropriate counselling and learning support during their learning program.

Key tasks		
Objective	Strategy	Responsibility
Improve experiences for customers who contact Torrens Valley TAFE	Review protocols and guidelines for staff providing telephone service to customers. Provide customer service training as required. Internal promotion of web site and internet access.	PR Unit, Assistant Director
Conduct a review of the existing customer support services	Initial staff workshop 16 th October 2002	Assistant Director Manager Student Services
SWOT Analysis	Review imminent changes to SATAC processes, online enrolment etc Input on expectations of Generation X and Y clients	Consultant
Review current duties of staff	Interviews with all staff – what are we doing now, what must we retain, what else could we be doing?	Consultant
Review potential new services to clients	Staff forum to develop ideas about improvements to current situation	Consultant, all staff
Implement recommendations	Utilise opportunities through campus redevelopments Improve online information and services	Manager Student Services Assistant Director
Develop online support	Promote http://tafestudents.com site Ensure information on TVT website is complete and accurate	PR Unit Assistant Director, web strategy team
Communication and implementation process		
<ul style="list-style-type: none"> <input type="checkbox"/> Email, Intranet home page, posters and stickers on staff computers <input type="checkbox"/> Development of an agreed model of customer support <input type="checkbox"/> Endorsement and implementation by Management 		
Outcomes and performance Measures		
<ul style="list-style-type: none"> <input type="checkbox"/> improved use of TVT website by staff and clients <input type="checkbox"/> Client satisfaction >90% in appropriate elements of survey <input type="checkbox"/> Integration of customer services and improved access for clients. 		

5. EVALUATION

John Mitchell , in his recent report *e-Business in Education: case studies on the effective use of electronic business in the education sector* (NOIE, Mitchell 2002), lists fifteen good practice criteria for e-business projects which were identified in his case study of the University of California, Los Angeles. These criteria provide a useful checklist against which the individual strategies and activities outlined in this Change Management plan can be evaluated for indicators to their likely success and of areas that will require additional attention.

Good Practice Criteria for e-Business Projects	
Criteria	Application
1. Clarity of business drivers and goals	Torrens Valley has clear strategic priorities and associated development plans
2. Clarity about users' needs	Market research will be used to identify the needs of market segments.
3. Focus on return on investment	Strategies are measured by improved business and greater client satisfaction.
4. High level executive support	The incorporation of e-business principles into business processes and learning delivery is supported by Director and the responsibility assigned to the Assistant Directors
5. Commitment of adequate levels of funding	Projects are enabled through the sourcing of both internal and external funds.
6. Ability to integrate earlier initiatives with new plans	Previous activities to improve infrastructure and provide staff development supports the increased use of e-business and e-learning.
7. Thorough planning at all levels	Torrens Valley Institute has a well established process for strategic and operational planning.
8. Appropriate technology infrastructure	Technology infrastructure has been developed with consideration of future needs for access, bandwidth and capacity. Provision of internet enabled computers is widespread.
9. Development of an effective web interface to legacy systems	VLE project examining interface to legacy systems through XML
10. Use of effective change management strategies	Change management processes examined by Managers and key staff. Use of these strategies in implementing aspects of the Change Management Plan.
11. Provision of staff development	Staff development is a key priority

Good Practice Criteria for e-Business Projects	
Criteria	Application
12. Use of extensive alliances with software developers and hardware providers	TAFE SA has developed alliances with software developers and hardware suppliers. Whole of Government purchasing policies are used.
13. Development of enabling policies	Document Management Policy has been developed. Guidelines for communication and publishing are available. Use of Intranet for distribution of policies, procedures and forms is well developed. Communication strategies exist across the Institute.
14. Use of trials	LearnScope and Reframing the Future activities enable the Institute to pilot strategies before major implementation.
15. Evaluation of trials	Review processes for projects and annual plans are undertaken and key learnings identified.

Conclusion

The Torrens Valley Knowledge Management Strategy supports learning by our customers and our staff. It is a combination of Knowledge Management, Performance Support, Customer Service, Content Development and Learning Management Strategies.

It underpins our delivery of flexible learning when and where our customers require it and it empowers our staff by making them part of a learning organisation which values their intellectual capacity and knowledge building capability. Technology is the tool that enables us to put a human face to e-learning.

“The only thing that gives an organisation a competitive edge is what it knows, how it uses what it knows and how fast it can know something new.”

Frank Bate (Flexible Learning Leader 2000) in presentation to FLAG 17 July 2001

Additional material

Parts Two and Three of this report address considerations for the selection of a Learning Content Management Systems or e-Learning Suite, an analysis of several currently available applications and a chart comparing the features of the selected systems. It has been compiled as part of the Flexible Learning Fellowship with the assistance of Mr Andrew Towsty who was employed as a research assistant.

BIBLIOGRAPHY

- Barron, Tom (August 2000) *A smarter Frankenstein: the merging of e-learning and knowledge management* <http://www.learningcircuits.org/aug2002/barron.html>
Accessed August 2001
- Beer, Michael, Nobria, Nitin (May-June 2000) *Cracking the code of change* **Harvard Business Review** p137
- Brandon-hall.com (2001) *Learning management and knowledge management: Is the Holy grail of integration close at hand?*
www.brandon-hall.com
- Brown, David G (May 2002) *Searching for chunks* **Syllabus Magazine**, May 2002
<http://www.syllabus.com/syllabusmagazine/article.asp?id=6337>
Accessed 22/5/02
- Carliner, Saul (2002) *What executives must know about e-learning.*
http://www.potomactechjournal.com/displayarticledetail.asp?art_id=55560 Accessed 3/4/02
- Downes, Stephen (2001) *Learning objects*,
www.atl.ualberta.ca/downes/naweb/column000523_1.htm
Accessed 24/3/2001
- Downes, Stephen (2002) *Smart learning objects* **The Learning Place**,
May 2002. <http://education.qld.gov.au/staff/learning/courses/sdownesapril.html>
Accessed 22/5/02
- Drinis, Eve and Corrigan, Amy (May 2002) *Confessions of an e-learner: Why the course paradigm is all wrong.*
http://www.onlinelearningmag.com/onlinelearning/reports_analysis/feature_display.jsp? Accessed 22/5/02
- Ellis, Ryann K (2001) *LCMS Roundup*
<http://www.learningcircuits.org/2001/aug2001/tools.html> Accessed 17/06/02
- Hall, Brandon (2001) *LMS 2001*
<http://www.learningcircuits.org/2001/jan2001/hall.html>
Accessed 17/6/02
- Hearn, Justin (June, 2002) *Blended basics: how to pick from the best of both delivery worlds.* **e-learning Magazine**, June 1 2002
<http://www.elearningmag.com/elearning/article/articleDetail.jsp?id=21258>
- Learning Management and Portals* (2001) eLearnity, Cirencester (UK). Accessed from www.elearnity.com
- Lim, David and Klobas, Jane (2000) *Knowledge management in small enterprises* **The Electronic Library**, Vol 18 No 6, pp420 - 432
- Mitchell, John (May 2002) *e-Business in Education: case studies on the effective use of electronic business in the education sector.* National Office for the Information Economy, Canberra

Mortimer, Lori (April 2002) *(Learning) Objects of desire: Promise and practicality*
<http://www.learningcircuits.org/2002/apr2002/mortimer.html> Accessed July 2002

Nichani, Maish (May 2001) *LCMS = LMS + CMS (RLOs) – How does this affect the learner? The instructional designer?*
<http://www.learningpost.com/elthemes/lcms.asp> Accessed 17/6/02

Nilsen, Jorgen Andre (Oct 1999) *The future of e-learning content*. SRI Consulting

Oliver, Ron (2001) *Assuring the quality of online learning in Australian higher education*' Paper presented at *Moving Online II*, September 2-4 2001

Rosenberg, Marc J (2001) *e-Learning: strategies for delivering knowledge in the digital age*. New York, McGraw Hill

Richards, Griffith and Hatala, Marek *POOL, POND and SPLASH: a peer to peer architecture for Learning Object repositories*. Technical University of British Columbia, Surrey BC, Canada (Canarie Learning Program)

Sitze, Amy *Land of confusion: six pieces of advice on how to evaluate a learning management system* **Online Learning**, September 2001

Skyrme, David J (2002) *Developing a knowledge strategy*
<http://www.skyrme.com/pubs/knwstrat.htm> Accessed 1/5/02

Smith, Steven (2002) **Living websites** Adelaide, United Focus
www.unitedfocus.com.au

Shepherd, Clive *The end of the course as we know it*.
<http://www.fastrak-consulting.co.uk/tactix/Features/theend.htm>
Accessed 22/5/02

Wilson, Jack (May 2002) *More than digital content: long live your course*.
Syllabus magazine, May 2002.
<http://www.syllabus.com/syllabusmagazine/article.asp?id=6331>
Accessed 22/5/02

Zieberg, Charlene (2001) *Ten steps to successfully selecting a learning management system* **Lguide**, Tacoma (Washington)