

The Rol on e-Learning

The Australian Experience

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click**2**learn™

MAKING KNOWLEDGE A TANGIBLE ASSET.

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Executive Summary

E-learning is the application of information technology to develop, manage and deliver training across an enterprise. It applies to the delivery of training, but it also covers the monitoring, scheduling, financial management and all other aspects of the training process. There is a perception in some areas that e-learning is about content, but modern e-learning systems are about much more. They encompass not only content but also the technology platform that delivers and manages it, and the services which support e-learning, including maintenance. Indeed, many major e-learning companies do not themselves develop content, but focus on the technologies that enable content to be effectively delivered and managed.

The worldwide e-learning market will rise from \$US1.7 billion in 1999 to \$US23.1 billion by 2004, by which time the Australian e-learning market will be worth over \$A600 million. But this growth is not evenly spread. Tight budgets in recent years have meant that many existing training systems have not been updated, and that many companies have not invested in training to the extent they might.

Companies that have invested in e-learning are realising many advantages. These include much lower costs of training, the ability to impart much higher amounts of knowledge than through traditional methods of training, more effective management of the learning process, increased staff satisfaction and retention, and many others. But there remains a great deal of uncertainty about how to measure the effectiveness of e-learning. Most literature on the subject builds on the five-level Kirkpatrick/Phillips model:

- Level 1: Reaction: How did people respond to the training?
- Level 2: Learning: How much did they learn?
- Level 3: Behaviour: How did their behaviour change?
- Level 4: Results: What effect did the training have on the organisation?
- Level 5: Return on Investment: Did the benefits of the training outweigh the costs?

These are progressively more difficult to measure. A proper measure of Return on Investment (RoI) in particular is the subject of much debate in the e-learning community currently. There is now a substantial body of work that demonstrates how RoI can be applied to e-learning. The consensus is that there are four main areas where e-learning can save reduce costs or increase revenues:

- Cost savings due to the efficiency of using a learning management system (LMS). There are substantial savings in administration (20 to 50 per cent) and content development (up to 40 per cent) over training not based on an LMS.
- Conversion savings. Many studies show that e-learning is much more cost-effective than instructor-led training (ILT). There are savings in reduced travel time, not having to hire or contract an instructor, fewer materials, lower use of facilities such as classrooms, etc.
- Productivity improvements. A standard measure of productivity is revenue per employee. There is data to indicate that productivity can increase by up to 10 per cent when e-learning is used to support blended on-the-job training.
- Intangible benefits – customer satisfaction, employee satisfaction, etc. By their nature these are harder to measure, and they can be difficult to quantify in an RoI analysis.

Most of the literature to do with the application of RoI to e-learning deals with the first two areas, which are centred around saving money. There is much less available on how e-learning can increase revenues and profitability through improved productivity and other areas. Cost and conversion savings are relatively easy to determine, because the components can be readily identified. But productivity improvements are harder to measure, and harder still to attribute to a particular cause.

But the battle is being won. No two situations are the same, which means that no particular RoI methodology can apply in every case, but a general methodology has emerged. This involves identifying appropriate metrics, such as revenue per salesperson, product time to market and staff retention, and comparing them before and after the implementation of appropriate e-learning programs. Organisations that have adopted this approach generally find that even quite small improvement in productivity, conservatively measured, easily justifies the implementation of an e-learning program.

What is E-Learning?

E-learning is a broad term that describes the use of information technology, and in particular technologies related to the Internet, to facilitate the learning process. Just as there are many types of learning, so are there many types of e-learning. There is no standard definition of the term, but all practitioners agree that e-learning is optimised to allow learning to take place over the Internet, which means virtually any time, anywhere. It also allows for individualised and dynamic (on-the-job) learning, using small pieces of knowledge called learning objects. This leads us to a simple, but necessarily broad, definition:

E-learning is the application of information technology to develop, manage and deliver training across an enterprise.

It is important to note that e-learning is about much more than the delivery of training, which was usually as far as earlier types of CBT (computer-based training) went. E-learning applies to the delivery of training, but it also covers the monitoring, scheduling, financial management and all other aspects of the training process. There is a perception in some areas that e-learning is about content – again, this is just one aspect of the whole process. Indeed, many major e-learning companies, such as Click2learn, do not themselves develop content, but focus on the technologies (platform, content development management, hosting etc) and services that enable content to be effectively designed, delivered and managed. E-learning standards (see below) ensure that content, once developed, can be employed by any conforming e-learning system.

E-learning systems are typically used in conjunction with other types of education such as instructor-led training (ILT). An organisation will typically employ a range of methods to ensure its employees receive the best training for the job they have to do. On-the-job training has always been important, as have more formal training programs, though the trend nowadays, facilitated by modern e-learning systems, is to integrate training content into the job. The use of multiple types of learning in a program is known as “blended learning”.

E-learning is related to Knowledge Management (KM), which is an even broader and less clearly defined term. KM refers to the way in which an organisation consciously and comprehensively gathers, organises, shares, and analyses its knowledge in terms of resources, documents, and people skills. Advances in e-learning and other technologies have greatly improved the way most organisations access and share information, and many enterprises now have some kind of KM framework in place, whether they have formalised it and recognise it as such or not¹.

To understand knowledge management it helps to understand what we mean by “knowledge”. Many people use “information” and “knowledge” interchangeably, but it is important to realise they are not the same. Information refers to any content that can be communicated, while knowledge refers to content communicated in context. Knowledge therefore includes both information and the context that makes that information meaningful and useful². KM, because it is such an ephemeral term, can be difficult to implement. Australian organisations are able to take advantage of Standards Australia’s KM framework, which clearly sets out the components of KM and how to implement them³.

There are two types of knowledge in an organisation: tangible and tacit. Tangible knowledge is that which is represented physically in some form, such as a manual or a spreadsheet. Tacit knowledge resides within the people in the organisation: it is their knowledge, skills and experience. Most knowledge in an organisation is tacit, but most e-learning solutions are designed to manage and deliver tangible knowledge. Now e-learning and KM are converging, and e-learning systems are becoming capable of also delivering tacit knowledge, through collaboration (see below) and other techniques.

E-Learning in Australia

Market analysis company IDC says that the worldwide e-learning market will rise from \$US1.7 billion in 1999 to \$US23.1 billion by 2004, growing at more than 30 per cent a year. No separate figures are available for the Australian market, but recent figures published by the World Information Technology and Services Alliance (WITSA) show that Australia comprises 1.6 per cent of the global market for IT products and services.⁴ Applying this percentage to IDC’s worldwide figure, and converting to Australian dollars, the Australian e-learning market can be estimated at over \$A600 million by 2004.

Despite these figures, the e-learning market in Australia is still very immature. In 1990 the Federal Government introduced the Training Guarantee Act, under which companies were required to spend 1.5 per cent of the revenues on training, but since that stipulation was discontinued in 1994 most companies have reduced the amount of money they have spent on in-house training. Tight budgets in recent years have meant that many existing training systems have not been updated, and that many companies have not invested in training to the extent they might. But there are many exceptions to this, and in most industry sectors some organisations are investing heavily in training, and in e-learning in particular.

Relatively speaking Australian companies still spend more on training than their international counterparts. An international study by the ASTD (American Society for Training and Development) in 2002 showed Australasia highest in the percentage of employees receiving training, at over 90 per cent. Training expenditure as a proportion of payroll was 2.8 per cent, higher than in Europe or North America but lower than in Asia⁵.

The Evolution of E-Learning

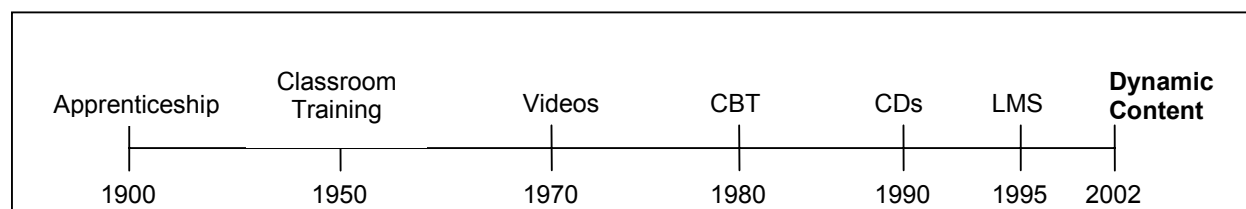
E-learning has evolved from earlier types of learning. For centuries, apprenticeships were the standard way of teaching work-based skills⁶. But they didn't scale very well, and during the industrial era classroom training became the method of choice. That approach is no longer appropriate in the information age, where knowledge workers need to make a large number of decisions, based on both tangible and tacit knowledge, in a fast-paced world. Learning now requires dynamic content to meet the ever-changing needs of today's workforce.

In the 1950s the advent of behavioural psychology led organisational theorists to refine classroom models to link training programs with business processes. Efforts to link classroom experience to the workplace became the Holy Grail for the remainder of the 20th century. New technologies were used to make learning more compelling and to increase the scalability of classroom-like experiences to many students. These included:

- Training videos
- Computer-based training (CBT)
- Interactive video disks (IVDs)
- CD-ROM multimedia courses
- Learning management systems (LMSs)
- Virtual classrooms

Today, technology has changed the way we think about content. All previous types of learning have been based on the assumption that content was essentially static. It was valued for its shelf-life. The more thorough and accurate the content, the longer the shelf-life, and supposedly the higher the return on investment. This concept of static content is not appropriate in today's fast-changing business environment. E-learning is a response to rapidly evolving business needs for dynamic content.

The Evolution of E-Learning



Dynamic Content and Learning Objects

Dynamic content is content that adapts and changes as the learner interacts with it. It enables learning that is personalised, interactive, collaborative and integrated with everyday work. Today's technology allows learning to be broken into discrete segments called learning objects, which can be assembled as needed to make entire individualised courses or used discretely for performance support.

Dynamic content provides learners with many of the benefits of the old apprenticeship model. By engaging in peer-to-peer support, tapping into accumulated reservoirs of knowledge and creating connections to experts

and coaches, knowledge workers can get the same kind of benefits that used to be delivered in a one-to-one apprenticeship. This helps ensure learners have the knowledge, the information and the skills to meet challenges and perform in an ever-changing business environment.

The concept of learning objects is very important in e-learning. A learning object is a small self-contained and self-describing piece of learning that accomplishes a specific learning objective. In addition to the content, it contains a description of itself that includes such information as the nature of the content, learning objectives, author, language and version. Information that describes the object is typically referred to as metadata. A learning object can be created, stored, managed, delivered, tracked, reported on and improved independently of an specific course, and can be reused and shared by multiple courses. This capability of reusability is a key aspect of learning objects, and allows for great flexibility in course design and delivery.

Learning objects, because they are discrete, targeted bits of content, can support the delivery of an appropriate amount of relevant information to learners just when they need it – typically during their daily work routines. This provides learning that is just in time and just enough, and reinforces the learning process as an integral part of everyday life and work. They also greatly improve the ability to support and manage the learning process.

This is quite different from classroom learning, or even CBT or CD-based training, where learners must step out of their work routines in order to “learn”. Using dynamic content in the context of the workplace enables learners to perform better without taking them away from the task. Studies indicate that this type of on-the-job e-learning can increase retention by 25 to 60 per cent above the retention rate for instructor-led training. Although today’s learners may not have an over-the-shoulder master craftsman available, they can still access the knowledge of experts and peers when they need it.

Personalised interactive learning is another key factor in providing performance improvement in today’s organisations. New technologies allow learning to be individually tailored. Learners can be directed to courses or learning objects that are suited to their specific needs, based on their profiles, test results, existing knowledge, personal learning goals and preferences, their learning traits and behaviours, or other criteria.

Dynamic content technology also enables organisations to provide content that changes as the learner interacts with a course. Two learners may take the same course, but as each answers questions differently or provides different information, the content adapts to each person. Studies show that personalised learning provides a 60 per cent faster learning curve than traditional “lowest common denominator” instructor-led training.

Collaboration is another set of technologies that enables the creation of dynamic interactive content. The Internet makes it much easier for learners to collaborate with others while learning and to more easily interact with the course instructor and their peers, even though they might be geographically dispersed. Thus e-learning systems are able to distributed tacit knowledge as well as tangible knowledge, greatly enhancing the learning experience.

There are many examples of how the use of the Internet can greatly facilitate the collaboration process. Web sites are an ideal way of sharing information and study aids – information on a web site can be accessed multiple times from multiple locations with the greatest of ease. The technology is also highly interactive, making techniques like “ask an expert” simple to implement and manage. These techniques seem straightforward enough, but they were very difficult and expensive to implement before the advent of the Internet, and they were much less effective. The Internet also makes possible discussion forums, where learners can exchange experiences and learn from each other. Properly managed, with a good e-learning system, this tacit information can be made more tangible, and turned into reusable learning objects.

It is also important to remember that Intranets are at least as useful as the Internet. An Intranet is an internal corporate network that uses the same technology as the Internet – web browsers, web pages, etc. A corporate Intranet is often the ideal medium over which to implement an e-learning system.

The Technology of E-Learning – The LMS and the LCMS

This brings us to the key difference between e-learning systems and earlier types of computer-based training. That is the use of Web-based technologies to create, deliver and manage the content. As mentioned above, this does not necessarily mean that e-learning takes place over the Internet, though it very often does, but that the use of Internet technologies such as hyperlinks, the browser interface, and XML (eXtensible Markup Language) are used. These technologies lend themselves very well to the training environment, and of course the Internet or corporate Intranet also provides a network for delivery and coordination. Two terms have emerged in recent

years to describe the key technologies of e-learning: LMS (Learning Management System) and LCMS (Learning Content Management System).

An LMS helps manage all of an organisation's learning activities and competencies. The activities managed by an LMS can vary from ILT to educational seminars to Web-based e-learning. From an end-user viewpoint, an LMS provides an effective way to keep track of individual skills and competencies, and provides a means of easily locating and registering for relevant learning activities to further improve skill levels. Administratively, an LMS makes it easy to enter, track, manage, and report on learning activities and competencies in an organisation⁷.

Typically, an LMS provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. An LMS may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums⁸.

An LCMS, on the other hand, is a system used to create, store, assemble, and deliver personalised e-learning content in the form of learning objects. A good LCMS needs the right mix of authoring and content creation capabilities and support for a wide variety of content formats. Other important features of a typical LCMS are a robust model for creating and managing learning objects, a scalable object repository, good search and browse capabilities, the ability to personalise the delivery of content, and detailed tracking and reporting capabilities.

An LCMS differs from an LMS in being more content-focused. It tackles the challenges of creating, reusing, managing, and delivering content; while an LMS is more learner and organisation focused, concerned with the logistics of managing learners, learning activities, and the skills and competency mapping of an organisation⁹. An advanced LCMS tracks the users' interactions with each learning object and uses this detailed information to deliver highly personalised learning experiences, while providing the authors or managers of the content with rich reports with which they can analyse the clarity, relevance and effectiveness of the content, so it can be continually improved¹⁰.

A key component of both an LMS and an LCMS is the "M" part of the terms – management. They are about the management of the learning process as much as they are about the learning process itself. Today, more than ever before, organisations are looking for efficiency in their investments in people and technology. It is very important to be able to effectively manage the end-to-end learning process, across different technologies and techniques. This includes the management of conventional physical assets, like classrooms, and the management of staff and content. It means monitoring and managing training costs, and ensuring a maximum return on the training dollar.

Standards and Interoperability

The Advanced Distance Learning (ADL) group, sponsored by the United States Department of Defense, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardisation of LMSs. SCORM is an XML-based framework used to define and access information about learning objects so they can be easily shared among different LMSs¹¹. SCORM is the most widely accepted e-learning standard.

SCORM enables course content and related information (such as student records) to be moved from one platform to another. It defines how course content can be broken into reusable learning objects that can be shared with other LMSs. The SCORM specifications define an XML-based means of representing course structures, an application programming interface (API), a content-to-LMS data model, a content launch specification, and a specification for metadata records for all components of a system.

Another e-learning standard is the Aviation Industry CBT Committee (AICC), an association formed to standardise instructional material for aircraft manufacturers and buyers. AICC specifications have at times served as an early benchmark for the e-learning industry as a whole. They cover nine major areas, and are widely used in the e-Learning industry as a de facto standard. But they are now a little dated.

The SCORM standard has been refined and proven through a series of technical working groups, but despite its success there is still no one e-learning standard. Rather, there is a collection of standard specifications that cover various aspects of e-learning. Those aspects include metadata for learning objects, learning content packaging, generic services provided by learning content repositories, and interoperability between learning systems and enterprise systems¹².

Measuring the Effectiveness of E-Learning

There is a widely accepted method of measuring the effectiveness of training programs. This method was developed by Donald L Kirkpatrick in 1959, when he was professor of marketing at the University of Wisconsin. Kirkpatrick's model comprised four levels of evaluation:

- Level 1: Reaction: How did people respond to the training?
- Level 2: Learning: How much did they learn?
- Level 3: Behaviour: How did their behaviour change?
- Level 4: Results: What effect did the training have on the organisation?

To these four levels leading e-learning and HR consultant Jack Phillips has added a fifth level¹³:

- Level 5: Return on Investment: Did the benefits of the training outweigh the costs?

Kirkpatrick's four levels are now over 40 years old, but they have stood the test of time and are widely used throughout the training industry. They have been adapted for e-learning, where the addition of Phillips' fifth level is now also widely recognised. In the e-learning community the model is now generally called the Kirkpatrick/Phillips model. Each level builds on the level beneath it. Level 1 should be evaluated, then Level 2, so on up to Level 5. Each level is more useful than the one that precedes it, but also takes more time and effort to evaluate. There are no standard ways to conduct the evaluation – it depends upon the nature of each learning program.

Level 1: Reaction

This level measures the learners' satisfaction with the program. How did they respond? Were they pleased? Did they find it worthwhile? Was it relevant and interesting? What did they do with what they learnt? A positive reaction is an important starting point in any learning process. While it might not guarantee success, a negative reaction will guarantee failure.

Level 2: Learning

This level measures the program's effect on the learners' skills and perceptions. What skills have changed? Have attitudes and perceptions been altered? Are the learners more knowledgeable? To properly evaluate the effectiveness of the program at this level, it is usually necessary to test learners before and after the program.

Level 3: Behaviour

This level measures how the learners' behaviour has changed as a result of the program. What new work practices have they adopted? Have these work practices made a difference to how they do their job? Are they improving? To many people, this is the most important level in assessing the program's effectiveness, but it is also one of the most difficult to measure.

Level 4: Results

This level measures the business impact of the program. What effect did it have on the organisation? Is the organisation better off? Did the program result in a measurable improvement in organisational processes? Organisations train their staff so they can perform their jobs better, with an aim to boosting performance, productivity and ultimately profitability. There are many ways of measuring this, but it is important to identify factors that were affected by the program from those that were not. Jack Phillips recommends a distinction between hard data – traditional measures like units assembled, tasks completed, etc. – and soft data, such as absenteeism, job satisfaction, and loyalty. He also introduced the concept of comparing these benefits to the costs of the training program, which led to his introducing a fifth level to the four-level Kirkpatrick model.

Level 5: Rol

This level compares the financial benefits of the program with its costs. The concept of return on investment is widely used in business, and through the application of the Kirkpatrick/Phillips model can be applied to training, and in particular to e-learning. Rol and how to calculate it is explored in the next section.

E-Learning and Rol

Return on Investment (Rol) measures the benefits of an investment compared to its costs. This can be expressed in a simple mathematical formula:

$$\text{Rol} = \frac{\text{Total Benefit of Program} - \text{Cost of Program}}{\text{Cost of Program}} \times 100$$

Thus, if the total benefit of the program is \$360,000, and the cost is \$80,000, the Rol is $(\$360,000 - \$80,000) / \$80,000 \times 100 = 300\%$.

Expressed another way, Rol is earnings divided by investment. Rol has traditionally been applied to corporate finance, where tangible amounts can be easily measured, but in recent years there has been a much greater focus on applying the practice Rol to areas that are less easily measured. E-learning is one such area.

This formula clearly shows that there are two aspects to Rol: reducing costs and increasing revenue. E-learning is no exception. An investment in e-learning is just that – an investment. Like any investment, if it is wisely made the returns are extremely worthwhile. But because the benefits are in many cases more difficult to measure than they are in areas where Rol traditionally applies, this does not mean that the practice of Rol is not suited to e-learning. Quite the contrary – the technique of Rol can be readily used to demonstrate the benefits of e-learning, both in cost savings and in revenue generation.

In the past, training was often done on an ad hoc basis, with little attempt to measure its effectiveness. But nowadays financial constraints and trends towards greater accountability in business have made management much more interested in whether the organisation is getting value for money with its training expenditure.

There is now a substantial body of work that demonstrates how Rol can be applied to e-learning. The consensus is that there are four main areas where e-learning can save reduce costs or increase revenues:

- Cost savings due to the efficiency of using an LMS. There are substantial savings in administration (20 to 50 per cent) and content development (up to 40 per cent) over training not based on an LMS.
- Conversion savings. Many studies show that e-learning is much more cost-effective than instructor-led training (ILT). There are savings in reduced travel time, not having to hire or contract and instructor, fewer materials, lower use of facilities such as classrooms, etc.
- Productivity improvements. A standard measure of productivity is revenue per employee. There is data to indicate that productivity can increase by up to 10 per cent when e-learning is used to support blended on-the-job training.
- Intangible benefits – customer satisfaction, employee satisfaction, etc. By their nature these are harder to measure, and they can be difficult to quantify in an Rol analysis.

Most of the literature to do with the application of Rol to e-learning deals with the first two areas, which are centred around saving money. There is much less available on how e-learning can increase revenues and profitability through improved productivity and other areas.

No two organisations are alike. Each has different factors to take into account, and each factor can usually be quantified in a different way. Following are examples of metrics that may be applied in each potential area.

Cost Savings

An LMS, by its nature, saves money over other types of learning because of improved administration and content creation and management. Cost savings can be made through centralised administration, learning self-service, automated billing and charge-back, and improvements in content creation and management.

- **Administration.** An LMS can automate such tasks as maintaining and distributing a course catalogue, registering for courses, call centre help, scheduling classrooms and instructors and other resources, materials distribution and other logistical matters, finance, testing, etc. Substantial savings can be made in centralising, streamlining and automating administrative processes.
- **Content.** Content creation and management can be one of the most expensive aspects of training. But once created, it can be used many times for a very low marginal cost. An LCMS can optimise creation, deployment, integration and standardisation, saving money through eliminating redundancy and repetitive acquisitions and incompatible formats.
- **Compliance.** This has become an important issue in recent years. The introduction of the Privacy Act in Australia in 2001, and an increased focus on OH&S (occupational health and safety) issues in most industry sectors, has greatly increased awareness of the costs of failing to comply with mandated standards in a range of areas.

Conversion Savings

Conversion savings come about through converting other forms of training, in particular ILT, to e-learning. E-learning should not be thought of as a replacement for ILT and other forms of training, but as an adjunct to them. But, properly integrated as part of a blended training program, e-learning's savings are relatively easy to quantify, because they can be readily identified. Examples include:

- **Training facilities.** These are often hired (hotel function rooms, retreats, etc.) If they are in-house, and amount can be sometimes be apportioned against freeing up the space for other purposes.
- **Instructors.** For external and contractual instructors, this amount is very easy to quantify. For in-house instructors, cost of salary or of time freed up to do other work is also relatively easy to quantify.
- **Travel and accommodation.** This can be substantial, and is very easy to quantify. In dispersed organisations ILT means travel, for staff and instructors, which can be greatly reduced through the use of e-learning.
- **Lost productivity.** As important as travel is the lost productivity of those engaged in it. This should be assessed at the value of the employee to the organisation (revenue per employee), rather than the employee's salary.

Productivity Improvements

Knowledgeable employees are more productive employees. The rationale for any sort of training, including e-learning, is to make people better at their jobs. An important aspect of determining ROI from e-learning should be in quantifying employee performance through improvement in productivity. Measures of employee productivity vary enormously, depending on the type of organisation and the type of employee. Examples include:

- **More effective sales force.** There is ample evidence to show that e-learning improves sales force effectiveness and productivity. This can be measured in average sales per employee.
- **Faster training.** Getting sales people productive more quickly is an obvious benefit, both in costs savings and increased productivity. The more time selling, the more will be sold. New products and new sales strategies can be rolled out faster, with significant effects on revenue.
- **Improved employee retention.** It costs a lot to recruit, hire and train new staff. The main reason employees leave organisations is because they are not growing in the job. All the evidence shows that

companies that provide training to their employees retain those employees for longer periods. It also helps in succession planning and career path development.

- **Better customer relations.** Customer attrition is even more expensive than employee attrition. It is widely accepted that it is five to eight times more expensive to attract a new customer than it is to service an existing customer. There is a strong correlation between employee retention and customer retention.
- **Better quality products and processes.** Quality is not intangible, it is real. TQM (Total Quality Management) is a recognised discipline, in which e-learning can play a major part. TQM focuses on such areas as reducing waste and duplication, which can be greatly facilitated through e-learning.

Intangible Benefits

These are often known as “soft” factors because they are difficult or impossible to quantify. It may occasionally be possible to quantify some of these benefits. Two key areas are:

- **Customer satisfaction.** This can be measured through customer retention (see above), but there are also other areas to consider, such as an improved corporate image, a reputation as an employer of choice (which then relates to employee retention), and as a thought leader
- **Employee satisfaction.** This can be measured in such areas as absenteeism, staff turnover, number of complaints and grievances, number of employee suggestions, tardiness and unpunctuality, initiative, etc. Depending on the nature of the work environment, some of these may be quantifiable.

Rol in Practice

How do you determine the Rol on e-learning for any particular organisation or situation? No two learning situations are the same, so no two sets of metrics will be the same. Every Rol calculation will be different, but the overall methodology is similar.

Cost and Conversion Savings

Most Rol exercises in e-learning focus on cost savings, usually by comparing e-learning to ILT (instructor-led training). The example below shows a typical analysis of the costs of three different types of training: ILT where the instructor goes to the students (Case 1), ILT where the students go to the instructor (Case 2), and e-learning, where there is no instructor or travel involved (Case 3). The total cost of the first case is \$413,600, of the second case \$550,366.67, and of e-learning \$270,000.

In Case 1, the biggest cost component (\$231,600) is in instructor-related expenses, much of it in travel. In Case 2, the biggest cost component (\$330,000) is in employee-related expenses. Again, much of this is travel, including employee salaries during travel. Case 3 (e-learning) saves substantially on employee-related expenses, and does away entirely with instructor-related expenses. Course-related expenses, most particularly the cost of the e-learning application itself (\$140,000), are higher.

The Rol of the e-learning option can be calculated by comparing its cost with that next least expensive training method (Case 1).

$$(\$413,600 - \$270,000) / \$270,000 \times 100 = 53.2\%$$

This type of Rol is relatively easy to determine. Most of the factors are easily quantifiable. But there are two major limitations with this approach. It assumes that the benefits of the two training methods are identical and, more importantly, it does not quantify any of those benefits and include them in the Rol equation. The equation becomes more realistic when these benefits are taken into account.

Financial Evaluation of Training Alternatives

	Case #1	Case #2	Case #3
	On-the-job	Centralised	E-learning
	with instructor	classroom.	via Internet
	travelling to		
	the employee.	Both employees	No travel
	No employee	and instructor	involved.
	travel.	may travel.	
Employee-Related Expenses			
Number of employees	1000	1000	1000
Employees per class	4	12	1
Training sessions needed (Employees/Employees per class)	250	84	1000
Length of training session (in hours)	8	8	5
Travel time to/from training per employee (in hours)	0	6	0
Employee salary per hour	\$20	\$20	\$20
Total cost of employee salaries (including travel time)	\$160,000	\$280,000	\$100,000
Total trips for employees to the training site	0	1000	0
Travel cost per employee (including travel, food & lodging)	\$0	\$50	\$0
Total cost of employee travel	\$0	\$50,000	\$0
Total Employee-Related Expenses	\$160,000	\$330,000	\$100,000
Instructor-Related Expenses			
Instructors per training session	1	2	0
Initial instructor prep time (per instructor, in hours, not inc. materials)	40	40	0
Instructor prep time per session (per instructor, in hours)	2	4	0
Instructor salary per hour	\$40	\$40	\$40
Travel time to/from training site per Instructor (in hours)	8	8	0
Total cost of instructor salary	\$181,600	\$136,533	\$0
Total trips per instructor to the training sites	100	40	0
Travel cost per trip per Instructor (including travel, food & lodging)	\$500	\$200	\$0
Total cost of instructor travel	\$50,000	\$16,000	\$0
Total Instructor-Related Expenses	\$231,600	\$152,533	\$0
Course-Related Expenses			
Cost of classroom per session	\$0	\$250	\$0
Total cost of classrooms	\$0	\$20,833	\$0
Cost of equipment per employee	\$0	\$25	\$0
Total cost of equipment	\$0	\$25,000	\$0
Employee materials (workbooks, etc)	\$10,000	\$10,000	\$10,000
Cost per employee for materials (copies, replication, shipping, etc.)	\$12	\$12	\$20
Total cost of employee materials	\$22,000	\$22,000	\$30,000
Cost of e-learning program	\$0	\$0	\$140,000
Total Course-Related Expenses	\$22,000	\$67,833	\$170,000
Summary of Costs			
Total Employee-Related Expenses	\$160,000	\$330,000	\$100,000
Total Instructor-Related Expenses	\$231,600	\$152,533	\$0
Total Course-Related Expenses	\$22,000	\$67,833	\$170,000
Cost per Employee	\$413.60	\$550.37	\$270.00
Total Cost of Training Strategy	\$413,600	\$550,367	\$270,000

Productivity Improvements

As well as cost savings there are benefits from e-learning in productivity improvements and intangible benefits. For the purposes of our example, we will use only productivity improvements – though what we call intangibles may sometimes be quantifiable, in which case they can be included in the calculations.

This is a different sort of calculation than the costs savings calculation above. In that case, we are comparing the costs of different types of training, and determining the RoI from the savings of the cheapest option (e-learning) compared to the other options. In this next calculation, we are determining RoI from the benefits – measured by increased revenues – that come from the productivity improvements brought about by e-learning.

These benefits, and the metrics that are used to determine them, will vary enormously from situation to situation. In the example below, we are measuring the RoI on the employment of an e-learning program for sales staff, designed to improve their sales skills and product knowledge. The example concentrates on three factors: improved sales effectiveness, faster training, and increased employee retention. While these may be difficult to quantify, the effect of even small improvements can readily be seen.

In our example, the company has 25 salespeople, with average annual sales of \$690,000 each. If e-learning increases each salesperson's effectiveness by just 1.5 per cent, the increase in revenues to the company is \$828,000.

Improved sales effectiveness

Number of salespeople	80
Average annual sales per salesperson	\$690,000
Total sales	\$55,200,000
Productivity improvement with e-learning	1.5%
Total sales after e-learning	\$56,028,000
Revenue increase	\$828,000

These improvements could happen for a range of reasons: better skills transfer from high performers, consistency of sales message across the organisation, higher degree of product knowledge, etc. Now let's look at the improvements that can come about through faster training.

There are two advantages to be gained from training sales staff more quickly on a new product: they will be able to sell that product sooner, and they will spend more time selling (because they have spent less time in training).

Faster training

Number of salespeople	80
Average annual sales per salesperson	\$690,000
Number of working days per year	230
Average daily sales per salesperson	\$3,000
Number of products	20
Average daily sales per product per salesperson	\$150
Number of new products per year	15
Current introduction time of new product (days)	40
Introduction time with e-learning (days)	38
Additional sales days per product	2
Additional sales days for all new products	30
Additional sales per salesperson	\$4,500
Revenue increase	\$360,000

In this example, e-learning improves the sales force's product knowledge to the extent that they can be trained in a new product in 38 days, rather than 40. This means the product hits the market sooner, increasing overall sales by \$4500 per sales person (2 days x 15 products x \$150 per product)/.

The final factor leads to lower costs, rather than increased revenue. It is a significant cost to hire and train new staff, so reducing staff turnover is a significant benefit. Satisfied staff are more likely to stay, so if e-learning makes staff happier and less likely to leave, it provides a tangible benefit. It also leads to productivity improvements, because staff that are already trained are more productive than those still being trained.

Increased employee retention

Number of salespeople	80
Annual turnover rate before e-learning	20.0%
Annual turnover rate after e-learning	15.0%
Cost to replace and train a salesperson	\$30,000
Number of fewer annual hires	4
Savings	\$120,000

In this example, if e-learning cuts the turnover rate among sales staff from 20 per cent to 15 per cent a year, and the average cost of hiring and training a salesperson is \$30,000, the company will save \$120,000 a year. Revenue will also grow, because fewer days are being lost training the new staff.

The examples above lead to increased revenue of \$1,188,000 and reduced costs of \$120,000. Those benefits would then be measured against the cost of the e-learning program to determine the RoI.

Similar examples could be provided for other areas of productivity improvement, such as greater compliance and improved customer relations. As mentioned, all of these areas can be difficult to quantify, but as the examples above show, even small improvements can have a significant effect on the bottom line.

There are nowhere near as many examples of RoI on e-learning arising from improved productivity as there are for cost and conversion savings. But there is universal agreement amongst researchers into the field that these productivity improvements are real. Properly managed e-learning programs increase employee productivity and satisfaction, which directly relate to improved corporate performance.

Case Study

Many organisations around the world have put e-learning into practice, and have realised the many advantages it brings. Those that have done so are usually able to measure the benefits. A good example comes from a major Australian financial institution which has implemented e-learning across a range of staff and management training areas. The company sees three levels at which benefits from e-learning accrue. Each level builds on the one before:

- **The introduction of the technology.** This is the initial level, where e-learning replaces – or more commonly supplements – classroom training and traditional learning methods. The RoI here is easy to measure, using a similar calculation to the cost and conversion savings example above. In this case, the company has quantified these savings in a number of areas, including a 60 per cent saving in content development through using an LMS.
- **The introduction of specific learning programs.** The company has introduced e-learning as part of a blended two year program for management training for over 1000 staff. Again, the RoI is measured in terms of cost savings. The company believes that implementing a blended program with a major e-learning component will cost only 25 per cent of a conventional ILT-based program, with the additional benefit of up to three times more information being imparted to each learner.
- **The introduction of an e-learning culture.** E-learning programs are now being implemented into many areas of the company's business processes. RoI is not so easy to measure at this stage, because its advantages will come over a longer term and be reflected in productivity improvements rather than readily identifiable cost savings.

The company is developing a methodology and a series of metrics to help it identify and measure productivity improvements brought about through the use of e-learning. The basis of the methodology will be to identify the total revenue growth attributable to the introduction of a large-scale blended training program, and identify the proportion of the cost of the program on e-learning implementation. For example:

Targeted revenue growth	\$100m
Actual revenue growth	\$76m
Total training investment	\$10m
E-learning investment	\$5m

In this case the RoI on e-learning would be substantial: a \$5 million investment would be responsible for half (\$38 million) of a \$76 million revenue growth. The RoI would be 660 per cent ($\$38m - \$5m / \$5m \times 100$). The company also sees a major intangible benefit – its employees' positive perceptions of the program. It also recognises that it will never be possible to come up with an exact figure for the RoI in productivity improvement, but believes it is worth making the effort to identify it. It intends to refine the methodology when it implements a major program to increase the productivity of its sales force over the next 12 to 18 months. It believes this will be an ideal proving ground, because it is easier to identify and develop metrics in sales than in management or customer service training.

Conclusions and Recommendations

Traditional learning methods remained unchanged for centuries. Even with the widespread introduction of CBT in the 1980s, the basic methodology remained much the same. It is only with the growth of Internet technology in the 1990s, and an increase in the capabilities and sophistication of training theory and practice, that we have been able to move beyond the traditional paradigm.

E-learning brings a degree of personalisation and interaction not previously possible. Technologies such as collaborative learning, dynamic content and learning objects, virtual classrooms, and the Internet and corporate intranets have brought a new dimension to training, and benefits that are still being properly understood. In the last ten years the advances in the technology, and in our understanding of how to use the technology, have been so great that all organisations need to totally rethink their approach to training.

There is ample evidence pointing to the advantages of e-learning. These include much lower costs of training, the ability to impart much higher amounts of knowledge than through traditional methods of training, more effective management of the learning process, and increased staff satisfaction and retention. But it is not enough to take these benefits on faith. In today's economic climate, any investment needs to be justified and its benefits made apparent. One of the reasons many people have not invested sufficiently in training is because its benefits are difficult to measure. Fortunately, methodologies are now available to help organisations measure the benefits of training. The ROI Consortium (www.roiconsortium.com) is an independent body set up in 2002 to develop ROI metrics for e-learning. Its research shows that ROI is now a leading factor in funding e-learning projects. It also quotes similar research from independent analysts Eduventures and ASTD¹⁴.

So what can your organisation do to determine your ROI from e-learning? This paper has repeatedly made the point that no e-learning situations are identical, so there is no standard spreadsheet or model that can be applied to determine the ROI. But you can develop your own by following some of the precepts outlined above. Remember, there are two key areas to focus on: cost savings, and revenue enhancement.

Cost savings

1. Determine the cost of the e-learning program.
2. Determine the cost of the program it is replacing, or how much it would take to implement the program without e-learning technology.
3. ROI is simply the difference between the two, expressed as a percentage of the cost of the e-learning program.

Revenue enhancement

1. Identify metrics that determine the productivity of the staff affected by the e-learning program. For sales staff, for example, this might be average annual sales, number of sales days, number of deals, etc.
2. Identify other metrics that may apply: For example, repeat sales per customer, staff retention, etc.
3. Build a spreadsheet where you can model the revenue enhancements or savings from these metrics.
4. Apply some "what-if" assumptions.
5. Where possible, measure the improvements before and after e-learning, and the proportion of the improvement attributable to e-learning.
6. Apply those metrics to the model.

This should be an iterative process – refining the metrics, reapplying the data. It is an inexact science (the ROI Consortium calls it "the art and science of ROI in e-learning"), but it can be done, certainly within reasonable margins for error.

Below are some references and websites that will help you with the process. Remember that the techniques for determining the RoI on e-learning are still in their infancy, but e-learning is itself a very recent development. Above all, remember that e-learning is about much more than numbers. In most cases it can easily be justified with even the comparatively rudimentary tools available today for determining RoI, but for many organisations the real benefits come in areas that can never be easily quantified.

We hear phrases like “knowledge economy” and “information age” so often that they have become almost meaningless. But they are facts. Successful companies in the 21st century are those that invest in the knowledge and skills of their workforce, keep that knowledge and those skills up-to-date, and do so with the most efficient tools available.

Ultimately, that is the return on investment from e-learning.

Sources and Further Reading

“Corporate e-Learning RoI Scoreboard” E. Yegin Chen, Eduventures (www.eduventures.com), 2001.

“International Comparisons: ASTD’s Annual Accounting of Worldwide Patterns in Employer-Provided Training”. ASTD (www.astd.org), 2002.

“Knowledge Management: A Framework for Succeeding in the Knowledge Area”. Standards Australia (www.standards.com.au). June 2001. ISBN 07337 3903 2.

“Profiting From Learning: Do Firms’ Investments in Education and Training Pay Off?” Laurie Bassi, Jens Ludwig, Daniel McMurrer, Mark Van Buren, ASTD (www.astd.org), 2001.

“The Return on Investment (RoI) Process: Issue and Trends”. Jack J Phillips and Patricia Pulliam Phillips, Franklin Covey Coaching. (www.franklincovey.com), 2001.

“ROI Success Kit” ROI Consortium (www.roiconsortium.com), 2002

Useful Websites

ADL (www.adlnet.org). Advanced Distributed Learning. Information on the ADL initiative, SCORM, and related issues.

ASTD (www.astd.org). American Society for Training and Development. The world’s largest association of workplace learning and performance professionals. A wealth of information about all aspects of e-learning and related issues.

Click2learn (www.click2learn.com). Website of a leading e-learning provider.

Eduventures (www.eduventures.com). Independent research and advisory consultancy on the e-learning and training market.

E-Learning Magazine (www.elearningmag.com). Articles, links, reviews, etc. about e-learning.

ROI Consortium (www.roiconsortium.com). Independent consortium devoted to the development of RoI methodologies for e-learning.

Standards Australia (www.standards.com.au). Standards Australia has produced an excellent overview of KM and how it can be implemented: “Knowledge Management: A Framework for Succeeding in the Knowledge Area”. It is available from the Standards Australia website (www.standards.com.au) for approximately \$A50.

Whatis.com (www.whatis.com). An online glossary of IT terms, including many e-learning terms.

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Endnotes

¹ www.whatis.com

² “The Hitchhikers Guide to Knowledge Management”, Kevin Oakes, TD magazine, June 2002.

³ “Knowledge Management: A Framework for Succeeding in the Knowledge Area”. Standards Australia (www.standards.com.au). June 2001. ISBN 07337 3903 2.

⁴ “Digital Planet 2002”, WITSA, February 2002.

⁵ “International Comparisons: ASTD’s Annual Accounting of Worldwide Patterns in Employer-Provided Training”, ASTD, May 2002.

⁶ Much of this section is adapted from “The Changing Landscape of Learning”, Lee Maxey, ASTD Knowledge Center, 2002,

⁷ “LCMS and LMS: Taking Advantage of Tight Integration”. Click2learn White Paper, August 2001.

⁸ www.whatis.com

⁹ “LCMS, LMS – They’re not just acronyms, but powerful systems for learning”, Kevin Oakes, TD magazine, March 2002.

¹⁰ “LCMS and LMS: Taking Advantage of Tight Integration”. Click2learn White Paper, August 2001.

¹¹ www.adlnet.org

¹² “E-Learning: Think Standards”, Kevin Oakes, TD magazine, April 2002

¹³ “The Return on Investment (RoI) Process: Issue and Trends”. Jack J Phillips and Patricia Pulliam Phillips, Franklin Covey Coaching. (www.franklincovey.com), 2001.

¹⁴ www.roiconsortium.com/news.htm