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# E-learning: engagement, enhancement and execution

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## Abstract

Explores the practical and theoretical issues involved in the evaluation, quality assurance and engagement of operating an e-learning programme as a distance learning service on an international basis for people in employment. Focuses on the experiences of delivery of e-learning of a case at the University of Wales, Lampeter that has been adapted from a project into mainstream provision. Suggests that the current emphasis of the prefix "e" in learning application needs to shift from electronic to the more supportive descriptions of engagement, enhancement and execution of the student learning programme. Reviews the current quality assurance recommendations in the context of e-learning. Concludes with the evidence emerging from the particular case of e-learning provision at Lampeter and the key findings of the programme.

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## E-learning and the e-economy

Judging by the many occasions now that the prefix "e" occurs, it appears as the single most characteristic and common theme of the current economy, business and learning spheres. The "e" serves as an abbreviation for the term "electronic". Electronic, in turn, refers to the insertion and application of a computer in the processes of communication, data collection, management and manipulation of databases, process automation, information storage and presentation. The attachment of the "e" label to the "e-economy", or the "new economy", has also come to describe the transformation of economic activities that comes hand in hand with arrival of the information society.

E-learning, e-education, or online learning refers to the way people communicate and learn electronically which has only recently emerged as a key source of competitive advantage in the information society.

Interactive distance learning, intranet-based training, Web-based training, online learning – all appear as different names, for different types of learning technologies, with different capabilities. However, the distinctions and capabilities that once separated these categories are made fuzzier by advances in technology. Though there are particular differences between them, for instance in bandwidth, user interface, or interactivity, they share a common strategy to deliver flexible learning. Moreover, these online learning platforms have begun to converge around common technology standards and a delivery infrastructure, the Internet as a means of enabling learning.

We seem to be in an era when the number of students inevitably increases in relation to the number of teachers. E-learning offers the beguiling prospect to redress the balance, without a sacrifice in the quality of teaching. For human resource managers with a keen financial interest in the delivery of development programmes, the medium offers cost-effectiveness, standardisation, flexibility and scalability. Equally important for the corporate sector, is the ability to precisely track the record and performance of each and every registered learner through a learner management system. Although still an emerging field, it offers many benefits that are radically different from a conventional classroom-based learning environment and



can still generate results for students. The benefits of e-learning are now well rehearsed and are summarised in the list below, developed and derived from analyses and reviews by Block and Dobell (1999):

- just-in time;
- accessible from any site with the right equipment;
- cost-effectiveness;
- personalisation;
- learner centred learning;
- contemporary;
- scalable structure;
- interactivity;
- uniformity of content;
- content updated rapidly;
- blindness of the learning engagement; and
- measurement of programme performance.

### What is the “e” in e-learning?

In seeking to make effective use of e-learning the educator and the student meet – in the first instance at least – an extremely elaborate set of communications media. The options that are available include:

- learning objects;
- video-on-demand;
- virtual laboratories;
- virtual classrooms;
- net meetings;
- streaming media;
- simulations;
- online assessment; and
- Web-based management tools.

Terms such as e-learning, technology-based learning and Web-based learning are defined and used differently by different organisations and user groups. Likewise, the term online learning has a certain degree of elasticity in its meaning. Fryer (1997) has proposed one form of categorising, in her words Web-based training, into three types:

- (1) the desktop tutor;
- (2) the online class; and
- (3) the ultra interactive model.

However, this typography and the application of terms is not universally accepted. In the eyes of some people Web-based training might only apply to the first category. The second category would also be known as

online learning and the third the virtual classroom.

In a review of literature on the tutor support of online learning, Whitlock (2000) makes the point that a suitable term to cover all three types has yet to emerge. He applies the umbrella term e-learning to cover all three types. The term e-learning thus applies to the provision of learning through computer-based processes or multi-media. These technologies are yielding a broad range of applications for the various systems. Applications that include, for instance: identifying and recording educational and training needs that might be collected through interactive questionnaires or assessments.

E-learning as a medium of delivery for education and training has quickly gained a strong band of proponents and the reasons for this are not at all hard to discover. The medium presents many possibilities for educationalists for enhanced access, more flexible learning, for extending the range of influence, as well as deepening the penetration for learning, among them. The educator enters a world in which information and communications technologies, Web design, educational design, delivery, support, assessment and educational marketing all converge. Independent learners face a bewildering range of options in learning portals, accredited or non-accredited courses and in selecting from hundreds of thousands of options on the online learning market in order to run on their personal computer. In summary, the educator can choose from a variety of electronic technologies to effect the delivery of learning, but specifically in terms of learning the “e” term has less to do with electronics and much more to do with the other “e”s: the engagement of the learner, the enhancement of the learning, the experience of exploration, the ease of use, the empowerment of the learner to control the learning schedule and the execution of the learning programme.

### Case context for the development of e-learning programme

In Europe in 1999, the European Commission launched the eEurope initiative as a response to the realisation that digital technologies are the key factor for growth and employment in order to accelerate. This

initiative aims to accelerate the uptake of digital technologies across Europe and ensure that all Europeans have the necessary skills to use them. It includes a number of action lines such as:

- achieving faster and cheaper Internet access;
- accelerating e-commerce;
- risk capital for high-technology SMEs; and
- participation for people with disabilities.

It also seeks to promote the widespread introduction of innovation in education with actions directed at a virtual community, and partnership in the area of multimedia educational tools, learning technologies, content and services (European Commission, 2000).

This stress on innovation and the application of information and communications technologies for vocational education is a core requirement of a range of EU community initiatives. Under the EU APAPT programme, for example, innovation in education and training directed at improving the performance of small and medium-sized firms has central importance in the operation of this programme along with the impact of ICT on the workforce. Under the scheme a project at Lampeter was supported with the broad aims of examining ways in which e-learning could help provide solutions to performance needs in small firms in broadcasting.

In Wales, the media industry is a high-profile component of the economy. It is credited as a source of entrepreneurial dynamism, a powerful magnet for talented young people and high-growth small firms. What happens in this sector is thus important, to the economy in general and to each and every member of the industry. Thus the original purpose was to shed light on the impact of technological change of firms in the media sector and their supply chain. This led to the formulation of specially designed Internet-enabled learning programmes launched some three years ago as a Welsh communications course, a scheme of study that was purposely designed and intended as a distance learning programme. The popularity of this programme led to an expansion of the provision and its inclusion in mainstream provision, as a novel way of reaching a new international market of students.

## Quality assurance of distance education

Dual-mode providers, that is those institutions that provide face-to-face and distance delivery, have been required to develop quality assurance protocols that demonstrate that the open and distance programmes on offer are of equal quality to those delivered by the traditional classroom method. The elements of quality control and assurance systems have been applied to modern open and distance learning for some time, such as in producing learning materials by Lewis (1989) and Freeman (1991) as well as in monitoring correspondence learning and activities in study centres in an effort to eliminate bad practice (Tait, 1993). Tait observed that the industrialised arrangements of ODL educational delivery systems have assisted the development of quality assurance systems (Tait, 1997). However, in his view these systems are similar to quality control in the rather obsolete industrial sense of the word with a propensity to consider performance after it has been completed.

More recently, guidance on assuring the quality and standards of higher education programmes of study by means of distance education programmes is provided by the Quality Assurance Agency in the UK (QAA, 1999). This advice is presented under six categories, together with generic precepts and outline guidance. The six categories are system design; programme design, approval and review; the management of the programme delivery; student development and support; student communication as well as representation; and student assessment.

The emergence and growth of e-learning provision as a new instructional paradigm at the institution meant that the QAA guidelines for conventional open and distance education needed to be assessed in the context of the new learning environment. The Internet-enabled environment required measures to support the information provision for the student's work at a quality of service level above that normally maintained by the institution. It led to the construction and maintenance of a mirror site to ensure continuous level of support. Thus in the Internet-enabled environment, the traditional measures of the size of the institutional library holdings and access to databases needed to be replaced by measures relating to the

mechanisms for information provision and support for the student's work.

Similarly, the application of information and communication technologies (ICTs) to facilitate the interaction of students with content sources, faculty support, information resources or with other students, needs to ensure that they focus on the appropriate inputs, processes and outcomes. Thus these factors for an e-learning programme are categorised under the same as the QAA guidelines on the Quality Assurance of Distance Education, but certain factors do have more emphasis due to the electronic method of delivery and support. These factors are presented in the same order as for the QAA guidelines together with explicit precepts for e-delivery in Table I.

Each of these precepts has an application in an e-learning environment. However, some of the differences can be aptly illustrated by elaborating the feature of personalisation that is available through e-learning. Compared to conventional support of distance learning, an individual can have a personalised route through an e-learning programme. This means that the flow through a programme can be adjusted to suit the individual, with personalised branches that can be repeated with many different variations of case work, until proficiency is gained. The notions of a class cohort are absent. The idea of class control is different. Feedback is more difficult to secure online for a range of causes, including absence from the workplace or various other reasons. Thus indicators such as student progression and the immediate responses from synchronous contact can be used as measures.

## Evaluation and e-learning

Evaluation is a process that professionals do all the time and in every discipline – comparing the actual and real, with the predicted or promised. It is a process of judging that is applied to activities, initiatives, people, programmes and results. The basic reason for doing this is to determine the effectiveness, or the efficiency, or the appropriateness of a particular course of action. The intention is to highlight good or bad practice, detect errors and correct mistakes, assess risk, enable optimum investment to be achieved and also allow individuals and organisations to learn.

The most effective use of the outcomes of the evaluation process is not in telling people what they have done wrong or that they are about to fail. Surprisingly, evaluation can be most effective when it informs future decisions, according to Geis and Smith (1992). The purpose in such circumstances is to enlighten managers so that they can improve what exists or do better on the next occasion. Evaluation is thus better used to understand events and processes for future action, whereas the term accountability looks back to properly assign praise, or blame.

Educational programmes have driven evaluation as a field of study, the key concepts, models, techniques and processes, for several decades. Educational managers need to report on the success of programmes to external funders as well as stakeholders. That is not to say that the evaluation now does not go on elsewhere – from science laboratories to sports performance events. Indeed monitoring the ongoing activities of an organisation, to provide reliable management information in a regular, systematic way, is a prominent function of

Table I Precepts for E-learning QA strategy

QAA guideline	Precepts for e-learning QA strategy
System design	Clear governance and control throughout an organisation, especially where there is a disaggregated design environment
Academic quality and standards Management	Attention to academic tasks to support the e-learning curriculum Appropriate choice and effective management of technology qualifications of staff
Student development	Electronic support for pre-entry counselling, motivation and autonomous learning needs
Student communication	Electronic participation to address student needs as well as strategies for feedback, to contribute to meetings and to disseminate information
Student assessment	Capabilities for e-learning are applied to enhance student assessment and achievement

evaluation as a part of the role of professional management, rather than a one-off summary evaluation of a particular initiative. Even when external evaluation of an organisation is undertaken, it is recommended that the evaluators be integrated into the organisation through the development of partnerships with management.

### Challenges in e-learning

E-learning is rapidly growing as an acceptable way of providing education and training. Whatever the distribution medium – Internet, intranet, or computer-based training – at each point e-learning has increased significantly. This in turn has focused attention on evaluation for which the current research base on evaluating e-learning is inadequate. It certainly appears that the initial cost of implementing e-learning programmes is high, making it all the more important to continue to conduct evaluation studies for the benefit of a broad range of individuals. Purchasers of e-learning, managers of participants, and participants often want particular forms of information on performance. The designers, developers and project and programme managers need information. Policy makers, advisors, educationalists, advocates and critics of technology-based learning and even lay people are interested in whether e-learning solutions are effective.

There are assumptions that priorities for good practice in classroom learning transfer across into the e-learning situation. There are already challenges emerging to this – for instance, to the belief that learning style preferences are key to instructional design in e-learning from Lewis (1989) of IBM who suggests that e-learning is still too new for most learners to identify online learning as a preference. Thus the sheer newness of e-learning for many individuals and groups brings pressure on evaluators to yield information about its effectiveness and efficiency as a learning solution.

The reasons for undertaking an evaluation of e-learning are the same as for evaluating any form of learning experience. At present, e-learning is not a proven process for many enterprises and there is high value to be gained from assessing the strengths and weaknesses of the e-learning solution in many organisations. The reasons are many and

varied and include who might benefit the most from e-learning delivery and what the likely returns on such an investment might be.

### Conventional approaches to the evaluation of training

The conventional and popular approaches to the evaluation of training are derived from traditional “goal-based” training, in which explicit training objectives are specified, during design and before delivery (James and Roffe, 2000). One such example is the four-level evaluation model developed by Kirkpatrick (1994), which is a very widely adopted and structured approach for the evaluation of training programmes. It is fundamentally a hierarchical model in which:

- level 1 addresses the reaction of the learner to the training programme;
- level 2 assesses how much people learned as a result of participating in the programme;
- level 3 determines the extent to which people apply the training in their work; and
- level 4 assesses the business impact of the training.

The level 1 evaluation stage of capturing the reaction of learners is appropriate to both “goal” and “goal-free” training. Even though the higher levels may also be applied to evaluate new methods of delivery, such as technical innovation, or pedagogy, the progression to evaluating ROI on training efforts are substantially goal-based. At levels 3 and 4, measuring performance on the job is difficult because, in practice, many factors can affect performance and the transfer of learning. These can include:

- personal factors, such as motivation, ability and attention;
- instructional factors, such as course design and trainer’s ability; or
- organisational factors, such as climate, timing, management, learner support, etc.

At level 4, whereas the costs of training can be established, the benefits are subjective, difficult to quantify and expressed in monetary terms. Moreover, the benefits will often accrue over a period of time.

An evaluation approach propounded by Brinkerhoff (1987) has strong similarities

with the four-level model. The first phase of the Brinkerhoff<sup>9</sup> approach would be appropriate to assessing innovation, by describing the gap that the innovation is intended to fill. The goals here are traditionally defined. However, in other areas of innovation, such as those involving new skills, either singly or in a range of combinations, this evaluation approach may be limited.

This is particularly the case when other areas of innovation are concerned, such as reaching a new audience by way of direct access or promotion, or when the training process is organised in a different way – such as where a training provider and recipients work together to define and refine goals and means. A similar goal-based focus for training evaluation is provided by Phillips (1991) who introduces a fifth level of evaluation for translating the worth of training into monetary value, which is in effect seeking a ROI on training.

All these methods share a common focus on determining the worth of training through an expression of financial value. Another approach, based on a polity of numerical comparison across a broad range of factors, is the scorecard worksheet (Hale, 1998). The approach is quantitative and aims to comprehensively cover the evaluation of the impact of training, but is also firmly linked to “goal-based” activities. It is intended to link training products and services to the client’s goals and focus attention on those goals that training can impact on most. Although the method is wide ranging in capturing a spread of activities, it again is applied when the client’s key goals are identified.

For both the hierarchical and the scorecard worksheet approaches there is a requirement to collect answers to evaluation questions. A wide variety of methods exist for doing this. The existence of so many different approaches in regular use signifies that no single methodology “is the best” and the fact that so many exist reflects on the different types of questions it is possible to ask during evaluation.

### **Contemporary evaluation issues for e-learning**

A few significant findings are emerging for the application of e-learning in firms and it is

worth looking at what the findings imply.

These studies have been based on industrial practices drawn from North America and draw on the evaluation level approach.

According to Hall and LeCavalier (2000) the most promising strategy for the effective evaluation of e-learning is to focus on level 3 – job performance-based measures. This feature emerged after a study collecting information from 11 firms with significant e-learning success stories.

Fewer than half the firms collect ROI data on their e-learning systems. Moreover, the formal assessment of the effectiveness of e-learning, particularly at the job-performance level, is proving to be difficult. Nevertheless, online testing (level 2 evaluation) is common and well accepted, and helpful in replacing anecdotal data on training effectiveness with hard results.

There is at present no general consensus concerning the importance of measurement at every level from perceptions to business impact. Thus from this small survey, for large corporations there is no general demand from managers for extensive evaluation metrics on e-learning. Learning management systems can now provide managers with a wide range of previously unavailable data. In the process, traditional measures of learning quantity – such as annual trainee days and course completions – become less relevant as an activity measure.

Although there is little consensus on metrics and measurement methods, organisations are reporting generally positive results when the data is available. The business case remains strong and management confidence in the effectiveness of e-learning is high in virtually all participating organisations. The information on user satisfaction with system performance shows some dissatisfaction related to reliability and other technical problems.

Once they have tried it, users clearly perceive the value of e-learning. Some organisations report that e-learners consistently finish what they start, but completion results reflect the low priority that some organisations attach to this. However, for organisations intent on knowing how their e-learning system is really doing, the next measurement challenge is likely to be job

performance, competencies, and intellectual capital (level 3 measures).

### Key questions for evaluating e-learning

A more comprehensive framework for the evaluation of e-learning has been propounded by Phillips *et al.* (2000). This team also assert that the current research base for evaluating e-learning is inadequate and postulate ten questions on evaluating e-learning that will help inform the debate. In the process, they make the point that most current evaluations at the business level, or return-on-investment (ROI) level are driven by the funders of e-learning and not by the designers and providers of e-learning. Moreover, that e-learning outcomes are as effective as conventional face-to-face learning, but that traditional classroom instruction gives more favourable responses from participants, that is from level 1 evaluation. Furthermore, that ROI studies indicate a positive return for firms utilising e-learning courses, although the broader range of benefits to a company ought to be assessed together with ROI. In terms of the processes of gathering evaluation data, the same evaluation strategies and processes applied on other types of evaluations can be applied to e-learning programs. The final observation is that designing evaluation into the e-learning process can save both time and money.

Ten key questions on the evaluation of e-learning, after Phillips *et al.* (2000):

- (1) Why evaluate e-learning?
- (2) What are differences in evaluating e-learning and conventional learning?
- (3) What parameters are relevant in evaluating e-learning?
- (4) How can support for the evaluation of e-learning be built?
- (5) What processes are necessary to fully implement and integrate ROI into measurement and evaluation?
- (6) What relevant criteria should determine which e-learning programs to evaluate?
- (7) How does ROI parameter fit into the evaluation of e-learning?
- (8) What resources are required to evaluate e-learning?
- (9) Is it feasible to isolate the influence of e-learning solutions from other factors?
- (10) Can ROI be forecast on proposed e-learning solutions?

### The simplified ROI approach

The great problems in collecting corporate evaluation information at the ROI level are the complications and cost. It is a common view that a full ROI analysis across a company can cost more than the training design and the delivery. In general, difficult factors might include the workplace separation of variables and the accurate attribution of improvements. In a corporate setting, e-learning has a major advantage in that the costs associated with travel and absence from the workplace can be relatively quickly determined and factored into the evaluation calculation. But, whereas this might be accomplished in-house, an external educational enterprise seeking to assess the impact of e-learning will have more difficulties.

An alternative approach proposed by Collis and Moonen (2001) and dubbed by them a simplified ROI method offers an alternative way to proceed that is more in the style of educational providers. Rather boldly they advocate the abandonment of an absolute and exhaustive ROI calculation and in its place a systematic but more intuitive calculation and the comparison of one situation with another. The approach is based on certain principles and a simple grading system from –5 (very poor) to +5 (very good).

These principles in summary are as follows:

- (1) Focus on a specific and local context.
- (2) Consider only those parameters that are changing in meaningful ways.
- (3) Group together factors as either economic, qualitative or efficiency.
- (4) Identify the major actors.
- (5) For each actor consider the perceived impact for all three types of factor.
- (6) Assign a score to the perception of each actor.
- (7) Add the results and use the totals as the basis for discussion.

An illustration of the method applied with an abbreviated range of actors for the e-learning course is shown in Table II. The striking features are the impact on system malfunctions across the range of stakeholders. The other noteworthy feature is the limited impact on the marketing value perceived by some tutors and continuing the efforts needed in keeping information up to date. The strong score by students for engaging interest arises through the enhanced access to staff afforded

Table II Abbreviated and simplified ROI for the Lampeter e-learning case

Actors	Institution	Department	Tutors	Actual and potential students
Potential for enrolment growth	+4	+4	+4	
Marketing value	+4	+5	+1	+5
Efficient way to engage student interest	+2	+4	+4	+4
Enhancing student support		+4	+3	+4
Effort to keep e-learning information up to date	-1	-2	-3	
Problems with system malfunctions	-4	-2	-4	-2
Totals	5	12	5	11

Source: Adapted from Collis and Moonen (2001)

by the method over conventional face-to-face methods.

### Driving forces on the evaluation of e-learning at Lampeter

The principles and processes for evaluating e-learning are the same as for conventional learning. Similar methods are available to collect data when evaluating e-learning programs, with the exception of direct observation. There are many different ways for assessing e-learning and the ultimate choice will depend on the values of the organisation, the goals of the project and the necessities to provide information for various audiences. As well as the four-levels, level 5 (ROI) and simplified ROI, another approach dealing with four broad areas for the investigation of e-learning has been proposed in an EPIC (2000) study of taking training online.

The areas proposed by EPIC are:

- the numbers of learners going through the programme;
- the efficient use of resources;
- the effectiveness of the results achieved; and
- the return on the investment.

Although this might be considered as just another re-grouping of the five-level evaluation model, with less emphasis on learner reaction at level 1, the typography does provide a thoughtful series of prompts that can be incorporated into evaluation instruments.

#### Numbers of learners

This area of evaluation and analysis deals with the numbers of students who have expressed an interest, registered, progressed and

completed the programme. To a degree it addresses certain marketing issues: how far has the coverage extended towards the target population? What is the geographical distribution: regional, national, and international? In addition, certain indicators may be measured or monitored including the cost of the programme.

Ten key questions might include:

- (1) How many enquiries have there been?
- (2) How many course registrations? And the percentage of no-shows?
- (3) Where is the e-learner from:
  - sub-region;
  - region;
  - state;
  - country?
- (4) What proportion of the target population is currently enrolled?
- (5) How many active and dormant e-learners are there? Any other volume statistics indicating the level of activity?
- (6) How many completers are there?
- (7) How many have gained the qualification?
- (8) How long does it take to complete:
  - for the fastest quartile;
  - the average?
- (9) What proportion complete from those who start?
- (10) How many completers want to progress?

#### Efficiency

E-learning ought to provide clients with major efficiencies over alternative methods in both time and cost. In terms of time, a learner management system will yield information on how long it takes a learner to complete the e-learning course that can then be compared with progress and completion on conventional courses. There are also time savings to be gained from travel to a classroom, a factor that can be reduced by stand-alone e-learning provision.



The costs associated with the programme fall into many categories including:

- curriculum design and evaluation;
- online tutors;
- technical support;
- administration;
- promotional costs; and
- the costs borne by students – that include salaries, benefits, etc.

There are other costs related to the marketing and promotion of the programme and IT infrastructure that might be met by central services of an organisation. A contrast with conventional classroom delivery will typically show a shift away, with savings from delivery but additional expense in design and learner support infrastructure.

Ten key questions might include:

- (1) What are the full costs of the e-learning development?
- (2) What are the comparable costs for conventional learning for a similar cohort?
- (3) What are the ongoing costs of learner support?
- (4) What are the most sensitive financial factors in e-learning delivery?
- (5) How can the development process be improved?
- (6) How efficient is the programme promotion?
- (7) How many enquiries have there been?
- (8) How efficient is the balance of time for the e-learning team?
- (9) How efficient is the content review process?
- (10) How well is the e-learning programme organised?

### Effectiveness

This category relates more directly to the four-level evaluation, although the aggregation together may imply that each of the levels is equally accessible for evaluation, it is commonly accepted that difficulties of evaluation tend to increase with the level. At level one, the reactions of participants are important since it is believed that the more positive the reaction the more likely transfer will arise to the job. The reaction level can be assessed through several measures that relate to the online learning environment. These methods include: chat, e-mail or online questionnaires. The online delivery and return of questionnaires has advantages in

that the responses can be analysed automatically through a linked spreadsheet programme.

For the application level, information is sought on the transfer and application of new knowledge, skills and attitudes to the job. The conventional processes for measuring the extent of the impact at this level are through:

- observations;
- questionnaires;
- automatic responses; and
- self-reporting.

Measurement here is useful when it can be compared with information on the participant's capabilities before the course.

Six key questions on effectiveness might include:

- (1) What is the overall satisfaction of the learners with the programme?
- (2) What change is there in the knowledge, skills or attitude of participants?
- (3) What changes are there in on-the-job behaviour?
- (4) What savings are there in labour?
- (5) What productivity changes have occurred as a result of the programme?
- (6) What changes are there for business impact for either individuals or work units?

### Return on investment

In return on investment (ROI), the financial impact of the e-learning in terms of business results is assessed against the investment in the programme. To determine the ROI, all the direct and financial costs that have been created by the e-learning programme are added. Next, a financial value to the business improvements that have been made over a 12-month period is assigned. Then:

$$\text{ROI} = (\text{benefits}/\text{costs}) \times 100\%$$

Certain e-learning project developments are justified on cost savings alone where the fully loaded cost of the traditional learning is compared to the cost of e-learning. Cost savings result in a positive ROI. This assumes that the output of the learning process remains the same and the earnings or net monetary benefits from both approaches are consistent, which may not always be the case. The evaluation of an e-learning project should

include a mechanism for forecasting the actual expected benefits, converted to monetary values, and then compare the benefits to the projected cost. The difficulty in the process is to estimate the actual change in business measures linked directly to the e-learning programme.

Ten key questions for determining ROI might be:

- (1) What processes are necessary to fully implement ROI?
- (2) What processes are necessary to integrate ROI into measurement and evaluation?
- (3) How big is the target audience for the e-learning programme?
- (4) How important is the programme to the strategic objectives of the organisation?
- (5) How important is the e-learning programme to the business impact of the organisation?
- (6) Where is the programme on the life cycle of the e-learning programme?
- (7) What is the duration of the programme?
- (8) What are the cost savings of the e-learning programme?
- (9) What are the direct benefits of the programme?
- (10) What are the outcomes from sensitivity analysis for a range of outcomes, such as break-even point from a range of possibilities on future courses?

A comprehensive evaluation system yielding the six types of data (reaction, learning, application, business impact, ROI, and intangibles) would be impractical to use for every e-learning project in larger organisations where there are many e-learning programmes. Moreover, certain types of e-learning programmes may not be appropriate for evaluating at the ROI level. Thus, a sensible approach must be taken to sort out which programmes are appropriate for comprehensive evaluation on the basis of their significance for the organisation.

### **Enhancement issues for the learning experience**

The reasons for evaluating e-learning coincide with the classical reasons for evaluating any type of learning experience. These are to determine whether the e-learning solution is accomplishing its objectives in the engagement of students, the enhancement of

the learning experience and the execution of the programme. The approaches included the simplified ROI method and the evaluation level and revealed a number of enhancement issues.

### **Online evaluation**

Online evaluation provides a facility to collect evaluation data that not only markedly reduces costs but also provides real time data on the progress of a scheme.

### **Unexpected client groupings**

New unexpected client groupings emerge as a major benefit for the university. These comprised three groupings:

- (1) micro firms in the locality;
- (2) the entry into the large corporate university market for e-learning; and
- (3) the independent e-learner drawn from the international marketplace for students.

### **Different students engage on e-learning**

The backgrounds of the students who enrol on the e-learning programme are significantly different from those on full-time, mainstream courses. In age terms, the large majority are aged over 45 years and these students come from professional backgrounds and with a substantial prior-learning history from their professional subject base.

### **Data is yielded to assist in marketing future initiatives**

Monitoring of the Web site and the learner management system provides a quick, precise and accurate indication of the effect of marketing promotion. Marketing promotion can be effective in various forms:

- maintaining and updating a fresh and attractive Web site that will attract enquiries and international registrations from the Web;
- holding “special promotional events” that are planned to coincide with course development milestones; and
- arranging a “drip-feed” of local news stories to stimulate interest and maintain the flow of registrations.

### **Progression rates and participation vary**

The ability to progress on the programme at the pace of the student means that some students can complete in two months, although the average is nine months. Some students “lurk” with no response from them

in terms of chat sessions, etc. but may submit their coursework for assessment.

### **Anonymity preference**

Many students prefer the anonymity offered by e-learning. Managers do not wish their fallibility and learning difficulties exposed either to people who know them or to people who work for them. Thus the availability of participation through e-learning offers them a new route for professional and personal development.

### **Compatibility**

Students feel more comfortable with new learning technology if the online experience is consistent and has familiar navigation and interfaces. Thus the design of a course programme that follows a sequence of progression to higher skills levels, should aim to maintain familiarity in the “look and feel” of the interface in a consistent “house-style”.

### **Simplicity**

The apparent complexity involved in installing a plug-in is an example of a perceived limitation to the adoption of online learning.

### **Trialability**

Trialability by offering a short “sampler” e-learning programme, without obligation may allow people to become introduced to the new learning technologies.

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