

Developing and implementing a corporate online learning strategy

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Biography

Tim Neill is founder and Managing Director of TNA Ltd, creators of bespoke online learning programs for corporate clients. This paper therefore presents a practical *developer's* view of planning and implementing an online learning strategy.

Tim joined IBM in 1966 as a Customer Engineer, becoming European hardware specialist for IBM's seismic array processors - an unashamed 'techie!' He moved into scientific computer system sales with Digital Equipment in 1974 before becoming a graphics Product Manager in Boston. He held positions in marketing and corporate training in the USA before returning to the UK in 1979 as European CAD Sales Manager for Applicon.

After operating as an independent technology consultant for several years, in 1987 he formed Tim Neill Associates to design and produce high quality, interactive training programs. Since then the company has evolved into one of the most experienced multimedia development teams in the UK, with clients including Nokia, Citibank, B&Q, Warner Music, PA Consulting Group and SITA Communications in London and New York.

Projects have included interactive training on CD-ROM and online, learning management databases and course booking systems, automated online testing systems, product simulations and interactive graduate assessment exercises. The company's web site carries summaries and screen examples of over 70 completed projects and may be found at www.tnanet.com.

1. The Challenge

'Online learning' is an exciting and relatively recent application of computer technology to the training of staff. Like all new technologies - from virtual reality to the mobile internet - it has been accompanied by extravagant promises and marketing hype.

There is plenty of evidence that online learning does have huge potential to raise efficiency, reduce costs and improve workforce skills. However, before discussing the realities of implementing online learning we should stop for a moment and reflect on the *changes* which are affecting businesses around the world. What is happening to the way we do business which renders traditional training methods obsolete?

Consider the pace of change in the business environment which we have come to accept as normal . . .

- Frequent mergers and take-overs mean that responsibilities and organisational structures are constantly being changed
- New products are being developed and brought to market in less time
- Products become less competitive more quickly and so have shorter life cycles
- New competitors spring up like mushrooms overnight, challenging existing players to adapt and respond - or fail
- New markets, new customers and new demands are continually emerging

Against these shifting sands, an organisation must still maintain a well trained workforce to develop, market, sell and support its products and services. Traditional classroom training is often too inflexible, too costly and too late to adequately maintain staff skill levels in the face of such a rate of change.

Add to this the fact that different staff need different types and degrees of training to do their jobs. For example, a pump manufacturer launches a new product. The Sales team will need detailed training on the potential market, the major features/benefits of the new offering, the competition, pricing and finance options. The Marketing staff mainly need awareness of the key features and benefits, Service engineers need training on repair and replacement procedures and senior management just need an overview of where this product fits and why it's a winner.

How many different classroom courses would this need to satisfy such different communities? How often will they run? What is the total cost? How will the company update staff skills and knowledge if the product or its competitors change, as they no doubt will?

This simplistic example highlights the core challenge which online learning seeks to solve: how can a company *continually* deliver up-to-date training in a form which suits a

wide range of differing needs? Well-designed online learning can meet this challenge; poorly designed programs (which simply try to deliver *existing* courses online) may fail badly.

Not only do different staff need different levels of training, but they may need it to be delivered *in different* ways.

The question is: what knowledge and skills are actually needed in each role? Traditionally, classroom training courses expose staff to a vast range of material which they are expected to memorise for later recall. But if analysis of a person's job reveals that they will rarely (if ever) need a piece of information then why waste time and money trying to drum it into them?

A good example of this is the role of the service engineer, maintaining equipment which is now so reliable that it may be 1 or 2 years after the training course that he/she meets a problem. The 5 day course would have been a waste of money. Perhaps what they needed was a 1 day familiarisation course backed up with a 'workplace reference tool' (possibly a laptop with online access) which they turn to *only when a fault arises*.

The idea of providing online training 'just in time' is an approach which can bring big dividends, if the assistance needed is mainly procedural, eg: using a database system, fault-finding a piece of equipment or revising product features just before meeting a potential client. Online learning in this form could be described as 'super Help'.

Essentially, what you are doing is enabling *all* staff to benefit from the knowledge of your experts, by giving them convenient access to the best practices. *Printed* training and reference materials (including CD-ROM) are often out of date before they reach their audience, cannot easily be updated and are therefore of little use.

This is the way ahead for the company with an online learning vision - creating and maintaining a continually expanding, centralised pool of knowledge, accessed in different ways for different people. What that pool contains, how it is structured and maintained, and how easy and effective it is to use . . . those are the issues to be tackled in building a successful Global Learning Environment.

2. A strategy for success

Developing a global online learning environment is obviously a major long term undertaking which will continually evolve. However, these are a few suggestions of the key elements to set in place:

2.1 Staffing and authority

Appoint a team to plan and manage the online learning project. This should be led by a senior manager reporting to the Board to ensure adequate funding, staff resources, the organisational changes which may be needed and the co-operation of all department heads. The team will need to include professional trainers and IT specialists.

One of the biggest obstacles to progress is that companies underestimate the time required of staff in this role. If they are to be effective they cannot also be expected to perform all of their current responsibilities.

2.2 Investigating what is possible

Before embarking on planning the online learning, it is essential to discover the practical and technological possibilities - the limits that you must operate within. How might these change over time? Unfortunately, the richness of *today's* online learning content is severely hampered by limitations in the connection 'bandwidth' for most dial-up users. In time this will cease to be a problem but a clear appreciation of what you can and cannot include in the training will avoid disappointment.

It is possible to design training so that it can adapt to different users' connection speeds, delivering richer content to those lucky enough to be linked via a high speed intranet.

For example, good quality video clips are impossible to deliver satisfactorily via a dial-up line and even audio narration via a 56Kbps line brings problems of poor synchronisation with screen text and images. So an early task is to define the target learner PC platform and the type and speed of connection. From the IT department's point of view (the folk who will be running the Training Server system), inviting a community of hundreds or thousands of users to log-on to a program which includes 'streaming' video and audio can spell disaster!

Other aspects to investigate include group conferencing, virtual lectures, chat rooms, and tutor support via email.

2.3 Training needs analysis

The current and future training requirements for all communities must be defined. Which training could be delivered online and which must be conducted in the flesh? Some activities will always need a workshop or role-playing sessions.

Many organisations are investing heavily in a 'Learning Management System' (LMS), a database application which pulls together numerous inter-related aspects of delivering training to staff.

For example, an LMS can provide:

- Job definitions with key competencies
- Career paths with pre-requisite experience/qualifications
- Training log for each employee with a record of all courses completed and test scores achieved
- Details of all available courses and materials (online programs, classroom courses, books, videos, etc.)
- Ability to launch and study online programs

- Online testing with the outcome controlling the training program content for each individual (ie: 'needs driven content')
- Ability to book onto a classroom course, to order books, videos etc.
- Reporting and analysis facilities, eg: comparisons of test scores across genders, countries, age groups, etc.

2.3 Training Server

The online learning system will need a home, a central repository for all programs and learner data records. The IT group will need to size this to deliver the range and type of programs to be delivered with acceptable performance.

2.4 Develop or purchase training modules

The relative merits of 'off the shelf' versus 'bespoke' training programs are covered later. However they are created, it is essential that an online program may be launched easily from the LMS and that any data generated by it (eg: test results, sections completed, dates, etc.) are output in a form that the LMS can accept. For programs which are only available on CD-ROM, the learner may have to order the program and any user results then written to floppy disk or sent via email or FTP connection to the LMS.

2.5 Learner PC platform and access

It is essential to define the minimum PC platform which you expect your learning community to have. A typical minimum configuration might be:

- PC with 300MHz processor and 64Mbytes memory
- 100Mbytes of spare hard disk capacity
- 800 x 600 resolution display supporting thousands or millions of colours
- Sound card with speakers or headphones
- Communication link to access the Training Server (from 28.8Kbps dial-up up to Intranet via LAN)
- Windows 95, 98 or 2000
- Internet browser (IE5, Navigator 5) with any plug-ins needed to support the training programs, such as Macromedia Flash or Apple QuickTime.

2.6 Measuring competence

All training programs should comprise a clear set of learning objectives, associated with one or more topics. For example, these may be to:

- Recall facts (memory)
- Associate information in groups
- Apply a learned procedure to calculate a result
- Predict an outcome from a set of circumstances
- Suggest an appropriate strategy to deal with a set of circumstances

The training content must be geared towards helping the learner achieve the stated objectives. The proof of the learner having attained that competence will be measured

in the post-module test. So, the learning objectives should be used to generate the test questions.

These are very easy to produce and mark for objectives requiring memory alone using multi-choice, true/false question types. However, more difficult to measure is competence in using judgement since the very act of posing multi-choice questions in itself provides clues to the best answer. Ideally, the learner should be able to describe what they would do in 'free form' text (as if they were explaining to the tutor in a classroom) but then the measurement of such responses cannot be left to a computer program. Relying on a program to mark single, typed words is also notoriously unreliable since variations in vocabulary and spelling may be penalised even if the learner has the correct answer.

The question is: *what* is being measured? Training on equipment or technical procedures lends itself far more readily to measurement by computer. For example, a piece of electronics may be realistically simulated on screen, faulty operation demonstrated and a range of measurements offered to the learner. The time taken is recorded, as is the route taken by the learner (and even the components they used) on the way to a diagnosis. If the learning objective was to 'locate and diagnose a signalling fault in the model 2100B transmitter in under 10 minutes' then this type of practice and testing is ideal for online delivery.

But if the training is on 'soft skills' (such as interviewing techniques or telephone complaint handling) then testing competence becomes far more difficult. Certainly the training can lead the learner through the principles involved and demonstrate worst and best practice. It can invite the learner to choose which they believe to be the most suitable approach to take in a given situation. But it may be that training such as this still needs people to gather together and practise what they have learned via online learning and for their performance to be observed by a tutor who can give immediate, personal corrective feedback.

2.7 Measuring effectiveness

It is one thing to test that a learner has achieved a set of objectives at the end of a training program but quite another to then say that the individual is now *more effective* at their job *because* of that training experience.

The measurement of effectiveness needs to be workplace based and if possible carried out using control groups who are still trained in the conventional way. Running *pilot* online learning programs is an excellent way of gathering this data, whilst conventional training *on the same subjects* continues for some staff.

2.8 Measuring cost-benefits

The team should, from the outset, be prepared to gather the data which will be used to support the evolution of online learning within the organisation. Most companies do *not* do this and so never really know whether online learning is more or less cost-effective than the classroom.

Of course, the measurements are not simple. But it's important to cost both online and classroom based training honestly and fully. The *true* cost of 'losing' an employee to attend a 2 day course 200 miles from their regional office should include not only travel, accommodation and subsistence, but also a proportion of the total training centre running costs, the cost of their absence on their colleagues' workload and even the cost (for customer facing staff) of lost opportunities or frustrated clients.

2.9 Supporting the learner

Online learning can fail for many reasons, the most likely of which is that the learner feels 'alone', lacks support and ultimately gives up on the course. This is especially true where the learning takes place at the workplace, and the employee is expected to juggle his/her normal duties with training. It will not work.

The employee's immediate manager must allow time off for workplace training. The employee may not actually leave his desk but at least the expectation should be amongst colleagues and others that 'this person is training for the next 45 minutes - do not disturb!' Easier said than done but why not a simple sign on the door or cubicle entrance proclaiming "Sorry, I'm training until 12.00".

The learner may also need *technical* support with the programs, to download a new plug-in or set their computer to display not 256 colours but 64,000. Who will provide this support? If there are frequently asked support questions then why not place these in a web page, indexed by problem description.

For *topic* specific advice, you may need to think about having subject matter experts accessible online. The easiest way is to email an expert who will provide a guaranteed response within, say, 24 hours.

And finally, to help the learner avoid problems of solitude, chat rooms can provide confidence that 'others are having the same problem - it's not just me!'

2.10 Trials

Running limited trials of a new online learning program will provide valuable feedback which should then be used to drive the following programs. Pick a small module and run the trial in several different geographical locations. Encourage feedback from the learners, possibly hold discussion groups to gather the emotions and sentiments which can be lost in an email. Interview the learners' managers separately - the learners may not be totally candid with them present.

You may even want to monitor learners while they use the programs although many people will feel self-conscious and under threat. Use the data you gather to improve or correct technical or instructional problems. Pay particular attention to the study habits of the learners . . . how long did a study session take? Was it too long or too short? Did they have any difficulty fitting the training in with their jobs? Did anyone have problems

with the language used? Were assumptions made which were incorrect, for example did they lack assumed pre-requisite skills or knowledge?

3. 'Off the shelf' versus 'bespoke' training programs

From the analysis of the training programs required, a decision must be made on whether to buy an existing commercial program or to create a 'bespoke' program.

If the training is on a common business procedure or in the use of a popular application (eg: making 'cold' telephone calls, first steps in using Microsoft Excel, etc) then there are many commercially available training programs which may be suitable.

If however, you need to train financial advisors on your latest investment offering or your call centre operators to use your own software application then you may need to have a custom training program developed, matched exactly to the purpose. Each approach has its strengths.

3.1 'Off the shelf' programs

Pros

- No development costs
- Quick to implement
- Relatively low cost to acquire in low volumes
- May be very well suited to specific needs (eg: Call Centre Management)

Cons

- Not suitable for company-specific processes, applications or products
- Difficult or impossible to modify
- Student tracking, testing and score logging all in different formats

3.2 Bespoke programs

Pros

- No compromises - you get exactly what you want
- Training is precisely matched to company processes, products (eg: 'Fault finding level 2 - the LG200 Hydraulic Control System').
- Complete control over future enhancements and additions
- Flexible and adaptable (designed to work with LMS and other programs, databases)
- Training may be built as a series of many 're-usable' objects, small study units (5-10 minutes) which may be called in any combination to suit different training needs. See 'World Class Online Learning' section below.

Cons

- Longer to implement
- More costly to develop for small numbers of staff
- Demands significant company involvement in the design and development stages

4. World class online learning - key features

What makes an online learning system 'world class'? What is it that leaves the learner equipped for the task in hand and feeling that the experience was enjoyable and worthwhile?

Their characteristics might include the following:

- Great looking user interface and content (stylish, modern, keyed to the corporate livery)
- Clear **and achievable** learning objectives stated at the start of the program.
- Simple and logical navigation controls (easy to get to any part of the program in one or two mouse clicks, no *inactive* controls to frustrate the user, clear labelling to indicate the module/section/unit currently being studied, numbered pages to indicate progress through a unit . . . 'page 3 of 7')
- Reliable operation (no crashing, hanging up, losing learner progress records)
- Content structured as many 'bite sized' study units, each requiring no more than 10 minutes. By creating the content in this way, you have the possibility of building an infinite variety of training courses from the same set of small study units.
For example, a learner may take a 'pre-course' test to gauge their initial level of understanding of the course objectives. The LMS will then highlight only those units which the individual needs to study. Effectively, each person experiences a unique training course.
A course for a marketing manager may select and present a mix of 12 units (sufficient for an overview of a product) whereas a sales representative will work through these 12 plus another 30 detailed units.
New units may be easily added since a course is not 'shrink wrapped'. In fact a 'course' becomes simply a menu of dishes, freshly selected to suit the learner.
- Content within a unit should be layered so that more detail on a subject is only displayed if requested. This gives learners control over what they see, since they are invited to drill down for more information. For example:
 - Level 1 (material which all learners will work through and which when completed will equip them to achieve the learning objectives stated at the start). Click for . . .
 - Level 2 (brief information providing explanations, functional descriptions, etc. Possibly displayed in a pop-panel, 100 - 200 words maximum). Click again for . .
 - Level 3 (full text of reference documents, specifications, terms and conditions, etc. May be many pages in length.)
- *Reading is not learning.* The learning experience should be designed so that users are not allowed to become 'passengers'. The worst example of this is the training program which presents static material and requires no more of the learner than clicking the 'next page' button. The learner should be required to take action, to click on buttons and controls to see what happens, to explore, to experiment. Anyone

who questions whether 'passengers' do learn as much as 'drivers' should think about the last time they were driven in a car and then later asked to find their own way . . .

- Content should be as rich as delivery constraints allow . . . video, audio, animations (all where justified and if they support learning), interactions, graphics.
- Very clear indication to the learner of *what* they have completed so far, how well they have done and *what remains* to be completed.

5. Working with external program developers

A good working relationship with developers is crucial for creating world class results. They may be large organisations with dedicated project managers, small companies whose developers are also your principal point of contact or self-employed sub-contractors. Key elements in a successful relationship include:

- Drawing up a clear brief of requirements
- Researching the available delivery technologies and limitations (these limits will drive the scope and type of possible content)
- A senior contact in the customer organisation with the authority to arrange meetings with subject matter experts (SMEs), push through pilot schemes, ensure that development versions are reviewed on time, ensure content material is provided as agreed.

The sequence of development of a new program would include at least these stages:

- Define scope of the program, the structure and the content down to the 'unit' level
- Define and select the Learning Management System
- Decide on method of delivery and therefore development technologies and tools to be used
- Draw up technical specifications for the Training Server and for the learners' PCs
- Interview SMEs, define learning objectives for each unit
- Draw up storyboards for all units, SMEs to approve
- Gather material for all units
- Develop program user interface, approve 'look and feel'
- Develop pilot unit with complete content and trial, including integration with LMS
- Take note of all findings and develop remaining units
- Implementation including online tutors, chat rooms, etc. as required

6. Implementation - avoiding common problems

Many online learning projects are a great success. Others have cost a great deal of money and leave the company wondering what went wrong. Here are a few of the things which can bring down the project:

6.1 Frustrated users

- Program slow to execute (graphics and animations too large for the bandwidth)
- Program gives errors or will not start due to missing plug-ins or inadequate system specification (the program should check the configuration automatically and give the user helpful guidance on problem remedies)
- Voiceover starts playing long after the images and text have appeared (voice files too big, insufficiently compressed, bandwidth inadequate for load)
- Video clips jerky, keep stopping while playing, poor quality images (bandwidth insufficient to meet the large data transmission demands of video)
- Unable to navigate easily (poor interface design, poor program structure prevent logical movement around the material, not properly tested on pilot group)
- Learners getting lost (bad content structure, poor navigation, no course map, no progress feedback)
- Learners not sure what to do next (ambiguous navigation controls, poor Help, no prompting)
- Test questions not matched to the content
- Learners unable to resume training where they left off (no Resume function, poor structure)
- Learners not able to devote sufficient time to workplace online learning whilst still performing their jobs (their manager should ensure that they can)

6.2 Bored users

- No involvement, no interaction - just page turning
- Material not stimulating (pictures and text, no movement, no interaction!)
- Minimum study unit too long (unable to justify such lengthy training sessions)
- Material not relevant (poor content design, insufficient analysis of training needs, insufficient attention to defining the learning objectives)

6.3 Lack of respect for the training

- Wrong information, errors
- Patronising style in text or narration
- Over-complicated/confusing text or narration