

## **Telecoms training for the 21<sup>st</sup> Century**

The rapid advance in telecoms and ICT technologies is a challenge for those responsible for ensuring staff have the requisite knowledge and skills.

In this article, Bob Nott discusses the need for, and barriers to, personnel development in the telecommunication sector and proposes a holistic approach to providing training, with emphasis on the delivery of courses covering the technological subjects that underpin service provision.

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### **1. About the author**

Bob Nott has many years' experience of designing and running training courses for technicians and engineers in the telecoms sector. Bob has developed both Instructor led and online learning courses at all levels from basic technician to under-graduate. Bob has also participated in drawing up specifications for a national vocational qualification (NVQ) in communications technology.

Bob is the founder and managing director of PTT, a UK based company that specialises in developing online learning for the telecoms and ICT sectors.

### **2. The need for technology training**

It is self-evident that the telecoms sector depends on technology to provide services to its customers. And in a closed loop of higher customer expectation fuelled by the improvement in the capabilities of telecoms services, advances in technology continue to alter the telecoms landscape.

One manifestation of this is the push for higher and higher broadband speeds resulting in the expansion of fibre-based services and the development of technologies such as G.fast.

Despite 4G mobile being introduced just a very few years ago, telecoms manufacturers and operators are busy planning for 5G to offer even faster Internet access on the move and serve new applications such as the Internet of Things.

Another pressure on telecoms providers is the need to reduce costs while meeting the demand for quadruple play services. The introduction of next generation networks is one example of the rationalisation of service provision. Now network function virtualisation is being promoted as another way of reducing capital expenditure and operational expenses while speeding the delivery of new facilities.

Those responsible for implementing and maintaining these new systems obviously need to be well-informed of the underlying technology.

But it's not just engineering staff who need at least an appreciation of the capabilities of new technologies. For example, those who are in a customer facing role in the telecoms sector know the headline features of the services they are selling. But do they have sufficient grasp of the wider picture to guide potential customers and help those reporting faults?

Managers also need an appreciation of the challenges of introducing new systems as well as the regulatory and commercial aspects.

The skills shortage in the IT and telecoms sector has been well reported. A recent survey<sup>1</sup> found almost half of all firms recruiting technical specialists reported that some or all of these positions had been hard-to-fill. Yet 99% of the employers surveyed expected to increase or maintain the number of tech specialists they employ during 2015. So the onboarding of new staff will also necessarily include an element of technology training.

It has been commented<sup>2</sup> that the move of telecoms equipment manufacturing out of Europe has exacerbated the skills shortage in Europe since technology expertise moves with the manufacturing base.

The overall result is that a significant proportion of staff in the telecoms sector need access to information about, and training in, technology based topics. The challenge is to provide such training in a cost effective way taking into account the need to ensure that content is relevant and up to date.

So how do busy telecoms personnel keep up with these changes?

### **3. The barriers to technology training**

Career development typically involves going on a training course. Perhaps a few days in a comfortable hotel and a certificate to hang on the wall when you have returned. Or, if you are unlucky, a day listening to a PowerPoint presentation in a stuffy meeting room.

Technology training often involves attending an equipment manufacturer's training centre. Equipment training has an important role for those involved in installing and maintaining equipment. However, it is necessarily focussed on specifics which may not transferrable to other manufacturer's equipment.

Though off-site training remains a significant contributor to skills development there are disadvantages. The need for front-line staff to be absent from their everyday roles is the most obvious. Equipment training may form part of the supplier's contract and so be "free" but classroom training from external providers has a relatively high unit cost.

Another disadvantage of classroom based training is that the retention of knowledge gained during a course tends to degrade over time, especially if not immediately applied to the day to day tasks of the trainee.

Many of the larger telecoms companies run their own apprenticeship scheme that combine college or university studies with practical training. The barriers to the running of apprenticeship include, in the UK at least, a shortage of further education colleges that offer telecoms related courses.

Apart from the lack of training expertise, smaller companies may be discouraged by the time, resource, and financial commitments that apprenticeships demand though schemes such as run by the Institute of Telecoms Professionals<sup>3</sup> attempts to address this.

#### **4. Flexible learning solutions**

Using technology to deliver training has been around even before the widespread use of the Internet. Then computer-based training (CBT) was delivered on CDROM. With Internet access now pervasive, several forms of technology based training have become available.

CBT which was essentially text based has morphed into e-learning with increased use of multimedia and interactivity.

Video presentations delivered over the Internet have become popular. The Massive Open Online Courses (MOOCs) initiative offers free online courses developed in the main by universities around the world. Many of these are video-based.

Web-based tools such as video conferencing and social media allow interactions between course leaders and participants. Collaborative learning between participants is also enabled by social media. The Open University FutureLearn initiative<sup>4</sup>, for example, combines video and audio presentations with articles and collaborative learning.

Technology based learning can usefully be categorised as either synchronous or asynchronous<sup>5</sup>.

Synchronous learning is delivered according to a pre-arranged timetable; video conferences and chatroom discussions are examples. The direct interaction between instructor and participants can help learners assimilate new concepts.

Asynchronous learning as provided by e-learning and pre-recorded video presentations allows participants to study at a time and pace that suits them (or their employer) best.

Apart from the flexibility it offers, asynchronous learning provides a consistent quality of training provision (even the best instructor occasionally has a bad day). Unlike classroom training, asynchronous learning allows participants to revise the content when they have returned to their primary tasks.

Asynchronous learning in particular also offers economies of scale: the larger the audience, the lower the unit cost of training provision.

Despite the benefits of online learning, there is an important caveat – not all online learning provides a productive learning experience. Unfortunately there are many examples of e-learning available that depend on simple page turning. The best types

of online learning, on the other hand, employs interactivity to engage participants in the learning process.

Interactions in asynchronous learning can include formative assessments, interactive simulations of system operation, scenario-based selections and animations that illustrate concepts. Email or chatroom communication with a tutor can also be a useful tool.

The increasing use of tablets allows asynchronous learning to be delivered to staff at times that are normally unproductive, for example when travelling especially when the learning App allows both off-line and online delivery.

## **5. Online learning in the telecoms sector**

As you might expect, telecommunications companies have been at the forefront of adopting technology-based learning solutions though classroom training still predominates.

There is an abundance of generic online materials available covering such topics as sales techniques, health and safety and guides to using particular computer programmes. Courses covering IT subjects are also available from a number of vendors.

Off-the-shelf online learning covering topics specific to the telecoms sector are less widely available. In a recent survey<sup>6</sup> of technology based training in the telecoms sector, over two thirds of participants reported that the available e-learning was too generic or lacked credibility.

It has been widely noted in learning surveys<sup>7</sup> that once learners become disaffected with online learning it is twice as difficult to re-engage them. So it is important that learning content is chosen for its relevance, and ability to engage learners.

For those applications that depend on information specific to the company, and that will have a large audience, the commissioning of bespoke content may be appropriate. One example of a cost-effective application of bespoke online learning is induction training. It may be worth discussing with an e-learning vendor the possibilities of tailoring existing off-the-shelf content to reduce development costs.

Some telecoms operators have successfully integrated e-learning with classroom-based training. Using e-learning as a pre-requisite for instructor led courses ensures all participants start classroom training at the same level while shortening time spent away from the workplace. For example, the theory of a particular technology is addressed by an e-learning course, while the equipment specifics are covered at the manufacturer's training centre.

As well as minimising the disruption to staff work schedules that attendance at training centres entails, blended learning also reduces the chances of those without the requisite starting levels impeding the learning pace of the entire group.

Apprenticeships combine practical training at the workplace with theory often learned at a further education college. As noted previously there may be difficulty in finding a local college that runs appropriate courses. E-learning could be used to deliver, or at

least support the attainment of, the knowledge component of the apprenticeship. This would then reduce the time the apprentices have to attend a college which may be some distance from their workplace.

## **6. Designing an effective training strategy**

Senior business leaders increasingly see shortages of skills as a major impediment to executing their business strategies<sup>8</sup>. So how can online learning be harnessed to support a learning and development strategy to meet business aims?

Training needs analysis will identify critical competencies to meet particular business objectives<sup>9</sup>. The analysis can also determine the most suitable training method for each competence. The key performance indicators (KPIs) should also be determined at this stage to facilitate the measurement of the return on investment (ROI) once learning has been implemented.

For maximum staff engagement learning programmes should be seen to be relevant to both the business and individual requirements - supporting personal career development is an important motivating factor.

The design and delivery of a learning programme should involve as many stakeholders as possible. For example, senior technical staff should have an input to the setting of KPIs for technological competences and choice of suitable learning materials for technical subjects.

Sourcing appropriate learning content is an important consideration. Content that is not relevant or is boring can discourage use of other e-learning courses irrespective of their merit.

If relevant off-the-shelf content is not available, then e-learning produced in-house or by an external bespoke developer may be appropriate. However, the skills required to develop effective e-learning, and costs, are often underestimated.

For our own years' of experience of delivering online learning to telecoms organisations, it is those organisations that use internal marketing to promote the use of e-learning and blended learning that are the most successful in meeting their business objectives through training.

The most successful learning organisations identify and train local champions to act as agents for change<sup>10</sup>. These champions actively encourage the take-up of training programmes within their department or for a particular area of expertise.

Although online learning should be easily accessible by the potential audience, ensuring trainees study courses that are at the right level for them is just as important.

Apart from encouraging the take up of online learning, learning champions can help staff select the most appropriate courses to meet the requirements of their jobs as well as meet their personal development goals.

Mapping courses to the competences required for particular job roles can also guide trainees to the most appropriate study programme.

There has been a trend in some telecoms organisations to de-skill roles with installers and maintainers given just specific task related training. Similarly, as mentioned previously, those in a customer facing role often do not have an appreciation of the broader picture in their industry.

Allowing staff to develop a deeper knowledge of telecommunications that may not be at first sight be needed for their current job roles can improve motivation, increase the flexibility and effectiveness of the workforce and improve staff retention.

In essence, a successful learning culture is one in which the value of learning is recognized throughout the organisation, and where learning is seen as a critical investment and enabler for business success.

## **7. Learning management**

Making online learning easily accessible is important as is the ability of managers to track training activity and measure attainment. There are many vendors offering learning management systems (LMS) some of which integrate HR functions with learning administration.

The learning facilities offered by most LMS include the ability to upload training materials including online courses and documents and a calendar function that allows instructors to schedule classroom and online training, and assessments.

Some LMS also support interaction between tutors and learners and provide tools to create and edit learning content and quizzes.

LMS training analysis tools allow managers to assess the effectiveness of training programmes. Managers can view individual trainee's progress through a course and their level of attainment as measured by online assessment. Statistical tools may include those that compare the use of courses and the average level of attainment achieved in each.

There is a danger of choosing an LMS that offers a wealth of training facilities but is complex to use and requires specialist expertise to operate effectively. When implementing an online training programme the emphasis should be on the choice of relevant content and an LMS that offers just those facilities that are directly beneficial in supporting the delivery and assessment of training.

## **8. Measuring success**

Demonstrating the value of a training programme gives confidence to key stakeholders that the training programme meets business objectives with a demonstrable return on investment (ROI)<sup>11</sup>. Monitoring training success also allows any weaknesses in the programme to be addressed.

An ROI calculation<sup>12</sup> compares the cost of implementing the programme with the financial benefits the training produces:  $(\text{Benefits} - \text{Costs}) / \text{Costs}$  expressed as a percentage.

This is the time that the KPIs are revisited – have they been met and what financial benefit have they produced? Several initiatives including a new training programme may have contributed to financial benefits, so apportioning gains may be necessary. The introduction of a blended learning programme may have resulted in savings in travel costs and less disruption to business activities so contributing to the benefit side of the equation.

Other hidden benefits of a training programme include improved staff motivation which will in the long run reduce staff turnover and, therefore, reduce recruitment costs.

Costs are perhaps easier to quantify. These include the costs of providing staff to implement the programme, sourcing an LMS and training content, classroom and equipment training costs and the administration of training provision.

Implementing a detailed ROI study can introduce significant costs in itself. However the gathering of anecdotal evidence in the form of feedback from learners and managers can be useful either as an adjunct to an ROI report or on its own.

A learning management system can be useful in gathering not only training statistics but feedback in the form of questionnaires presented at the end of each course.

Whatever the method adopted to measure training success, regular monitoring and adjustment of training programme will ensure the cost-effective delivery of business objectives.


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