CHAPTER 9

Working with E-learning Suppliers

Perry Williams

Introduction

The publication of resources is a moment of truth for any e-learning programme. You can spend time, effort and money designing your strategy, establishing the information technology (IT) infrastructure, preparing people to accept the change and promoting e-learning – which are all vitally important things to do. But what will people find when they click on the 'e-learning' link? Will the resources be any good? Will they tell their colleagues to come too, or not to bother? Ultimately, an e-learning system is only as good as the resources and learning it delivers.

So how do you make sure your e-learning resources work? This chapter draws on seven years' experience (both my own and that of colleagues at Learning Materials Design – LMD) of advising and developing e-learning resources for government departments, leading corporations, major charities and universities. In other words, it is written from the viewpoint of a specialist provider, with a good sense of what someone newly involved in commissioning e-learning resources might need to know.

The chapter starts from the point at which you have made the decision that e-learning resources – perhaps 'blended' with face-to-face training and computer-mediated communication (see Chapter 13) – will be the best way to deliver certain areas of training and development. The first section of the chapter is about the basic questions of aims and methods, the second section deals with managing the development process and the third section gives some guidance on costs and timescales – and what you as a commissioner can do to keep them under control.

Aims and methods: The balance of aims

Even if you think you know what you want, it is important to work through the implications as thoroughly as possible with everyone concerned, to make sure that when you get what you asked for you are not disappointed.To begin with, what do you want to achieve with the resources? It may be that your aim is a short-term one; perhaps some resources need to be put in place quickly, to prove the concept, to justify the investment, or to set a standard for resources to be developed later; or perhaps your organization has an immediate training need that it hopes to meet through e-learning. Perhaps your aim is a longer-term one, for example to shift the organization to an e-learning culture or to improve the quality of performance management. Or you may want to develop certain resources quickly to meet

short-term needs, but in such a way that the collection can be expanded to fulfil a longer-term strategy.

Establishing this will help to clarify what kind of resources are most important to your organization and what will count as a successful resource. It is also useful for clarifying how much or how little e-learning resources can do in themselves. For example, if the managerial aim is to effect a cultural change, you may need to remind other people and yourself of what any reputable developer will confirm: that e-learning resources can only *support* a change; they are not in themselves sufficient to create it.

Different times, different priorities

In the late 1990s, the UK Department for Education and Employment (as it then was) had just invested in an e-learning system that was intended to be something of a flagship among government departments. The department was getting a good range of generic off-the-shelf e-learning resources from NETg, but it also wanted to show how e-learning could address the department's specific needs and circumstances, so it commissioned LMD to develop a set of resources on performance management – which was a high profile issue internally at that time, as part of the 'modernizing government' agenda.

The initial aim, therefore, was to make a major impact. In view of this, it was agreed to use video clips of specially produced drama, which pushed the technology hard and which required some ingenuity to make it work within the network constraints. The resources had the intended impact, and although the video playback involved download delays, this was an acceptable trade-off for what was going to be presented as an innovation. When the Department of Education and Employment asked LMD to revise the resources in 2001, however, the priorities were different, and it was decided to replace the video with still photos and audio, grabbed from the screen image and audio track. It was now not so important that the resources be high-impact, but more important that they be robust.

See also, Rob Watson (2002), 'Seeing the wow factor', *e-learning Age*, March 2002: 20–22.

The balance of cost, quality and time

In any development project, there is a balance to be struck between cost, quality and time. Put bluntly, you can probably get what you want with one or maybe two of these, but you need to be prepared to compromise on the other. If you want to develop e-learning resources really quickly, you should expect quality to suffer (because there is not time to make all the checks you would otherwise do) or the price to rise (because it is not possible to do it in the most cost-effective way). If you want something really high quality, you need to be prepared to pay and to spend a long time over it. And if you want something really cheap, you should not be surprised if it is not all that good and it takes a long time (because it may be difficult to persuade people to give it a high priority). What you *cannot* have is something that is 'cheap as chips', world class, and delivered tomorrow.

This balance between cost, quality and time is another issue to clarify as early as possible. It is likely that one or another of them will be fixed, due to a strictly limited budget, or an immoveable deadline for completion – but this actually makes planning easier, because it introduces definiteness. If you yourself have no idea what balance you want, working with developers – internal or external – will be more difficult. Some of the most unhappy projects on which I have worked were those where the commissioner insisted on a tight timescale but

could not appreciate the implications of this for quality; only towards the end of the development did they become nervous about what others might think of the resources, and so committed more time and money to reviewing and revision. In fact, quality was more important to them than time, though they could not see this at the outset.

Quality is often difficult to discuss, because it can have so many aspects. You can define it as 'fitness for purpose', of course, but that depends on your knowing what the purpose is – another reason for being clear about aims! There are at least five distinct kinds of quality, each of which may be more or less important to you.

- **Acceptability to users/trainees:** All too often this falls at the bottom of the list, especially in organizations that think in terms of 'telling' or 'sending messages to' their staff. However, there are many organizations in which training (including e-learning) is seen as an opportunity to engage people's hearts and minds, and developers will be expected to think about what people want to hear as well as what the organization wants to say. As an educationalist, I am going to add that I think this approach makes for more effective training.
- **Effectiveness – or whether the trainees actually learn what they are supposed to learn from the resources and (a greater challenge) whether this actually makes a difference to their work:** Again, traditionally this has come low on the list, because organizations have been more concerned about seeing that training was provided than about making sure it was effective. Happily, this is now changing, partly as a result of the larger financial investments required by e-learning; indeed some organizations are now quite insistent on having a return-on-investment business case for training.
- **Acceptability to the organization:** This can be a very serious matter in organizations with super-powerful communications departments, which insist on policing every corporate external and internal communication for conformity to a corporate message. Other organizations are more relaxed about training resources, unless they are covering a particularly sensitive subject.
- **Accuracy:** No-one will ever admit that accuracy is unimportant to them. The real question is: how much time and money are you willing to put into checking? How much checking will be 'good enough'? Mistakes of spelling and grammar may be irritating, but on the whole no-one is likely to lose their job as a result.
- **Production values – or, how good the resources look and feel:** Professional work (writing, design, photography, audio recording, video recording, acting) on the whole looks better than amateur work; but for some purposes, amateur work (*good* amateur work) may be sufficient. It really depends on who is going to see the resources and what their expectations are.

The balance of sources

There are four basic ways you can get e-learning resources: you can buy them ready-made, off the shelf; you can adapt existing e-learning resources; you can transform the content of other modes of training delivery (for example, printed resources, face-to-face classes); or you can develop them from scratch. You will probably want some balance of the four.

Buying a copy of a resource that someone else has developed will almost certainly be cheaper than developing it yourself. The problem with off-the-shelf resources, of course, is

that they are necessarily generic, so they cannot include a lot of organization-specific detail; they may use a different terminology to the one you use, or they may simply feel 'foreign' (for example, from a different industry sector). But before rejecting an off-the-shelf resource that suffers from these problems, it is worth considering whether it could still be used in conjunction with an explanatory resource or study guide. (some example is: 'Work through Sections 1, 2 and 3.' 'Ignore Section 4, because it is irrelevant to our industry.' 'In Section 5, what they refer to as a *wimble*, we call a *dubrey*.' 'Section 6 includes a case from the financial services sector. What would be an equivalent case for our business?') It takes significant time to make a detailed review of an existing e-learning resource and to write a study guide; but even allowing for this, the cost is still likely to be much less than development from scratch.

Some generic e-learning resources are deliberately designed and built so that they are easy to adapt or customize to an individual organization's needs. Others are built in ultra-modular form, with the intention that the constituent 'learning objects' can be reused in different combinations, particular objects being added or subtracted according to need. This allows for customization of content, but is not much help if there is a particular overall message or vision that you want the resources to convey.

Designing for customization

When environmental consultants Casella commissioned LMD to develop an e-learning resource on health and safety for Cassella to distribute to their own clients as part of their training services, it was vital that the resource be easy to adapt or customize to an individual organization's needs.

The resource that LMD produced allowed for easy 're-painting' in the client's corporate colours, changing of words on screen, and the addition of extra screens – though not radical alteration of the basic structure.

For a close fit to a specific organizational requirement, resources need to be tailor-made. As with clothing, bespoke development is a more expensive option, but you can expect to get something that will fit you precisely. If you already have a face-to-face training course that can be transformed or printed resources that can be adapted, this simplifies matters, of course. However, you should beware the temptation of jumping to the conclusion that 'there's not much more to do'.

- The transformation may be more difficult than you think; successful face-to-face training, subtly tailored to those present, may be hard to capture in a static resource, and even effective print resources may not work well on screen (again raising issues of quality).
- The existing material may be less complete than you think; casual estimates of how much content can be reused are always over-optimistic.
- The existing material may be less good than you think; or, more subtly, what was fine for a training course delivered face-to-face behind closed doors may *not* be fine when expressed in cold text for anyone in the organization (and possibly outside it) to see.

As a general rule, transforming or adapting existing material for e-learning always requires more development-from-scratch than anyone anticipates at first.

The balance of people

There are three kinds of people you can ask to develop the resources: subject matter experts or trainers, external e-learning developers, and in-house e-learning developers. In many cases, you will want to involve two or even three of these and establishing and managing their roles will need to be part of the development process. You will want to involve subject matter experts when there needs to be specialist or technical content to the resource. The difficulty is that your experts may not have the skills to translate their subject knowledge into e-learning and write the content of the resource. The most difficult case is when they *think* they do (and they may indeed be good at writing briefing documents, lecturing to an audience or even conducting participatory training sessions), but in fact lack a sense of how to enable people to learn from a resource. Unless subject experts already know how to write learning resources, or are willing to learn extremely quickly, often the best thing is for them to provide raw source material to developers, be available to answer questions, and check the draft resource for accuracy – in other words, acting as quality assurance.

External developers will need to be involved if there are skills you cannot bring in any other way: for example, learning design, educational writing, design, coding, audio-visual production. External developers (or at least, some members of the team) will need to be able to grasp the subject matter and learn the organizational context, as well as to adjust quickly to your culture and ways of working.

In-house developers will almost certainly be cheaper than external ones, as well as probably more familiar with the organizational context and possibly the subject matter. You also have the management advantage of keeping lines of communication short. The disadvantage of in-house development is that you are limited in the skills, experience and breadth of vision you can call on, so what you are able to develop may also be limited. One way of getting the best of both worlds is to have external developers work alongside your in-house people initially, taking the opportunity to build your in-house skills, so that you are ready to take over maintenance and updating.

Using external developers to build in-house skills

When Oxford Brookes University was appointed by the UK Department for Education and Skills to deliver a national training programme for school coordinators for gifted and talented children, the course team asked LMD to help them develop a way of teaching a master's-level course on what was for them an unprecedented scale. With the lecturers, LMD designed and built an e-learning website, incorporating course materials, conferencing in tutor groups, individual tutor email support, and an ever-expanding collection of resources. Having been supported through the development of the first materials and the initial population of the site, the course team now creates new resources and manages the website entirely themselves.

Whatever combination of in-house and external people you use, you are going to be putting together a team of people from different worlds and ways of working. Developers do not necessarily understand content, subject matter experts do not necessarily understand e-learning, and none of them – even if in-house – necessarily understand the context of use. All you can do is to choose people who have as much understanding of the other areas as possible, to minimise the possibility of conflict and misunderstanding between them, or quite simply to reduce the time necessary for them to learn and respect each others' way of thinking.

The development process

Different developers have different methodologies for project management, and so have different preferred processes. Many come out of the software industry and adapt the project management methodology used in software development – so, for example, there may be intensive specification and documentation, with many iterative loops for testing and refinement. Some developers with a multimedia or web-design background are happier with a looser methodology, and prefer to plan content around 'storyboards' showing roughly the relation of onscreen elements – essential for resources that are highly visual or graphical, although resources that are primarily verbal will probably still need a conventional editorial approach of planning and drafting text. Other developers (and I put myself in this category) have a background in education rather than IT, and their project management gives an important place to learning design and the specification of learning outcomes.

You and your developers will need to agree some kind of project management framework, based on what is usual in your organization and what is usual for them. If your organization normally uses a highly detailed methodology for large-scale commissioned work, you may find that you can abbreviate it somewhat. However, you will probably want to include all the aspects listed in here in some way, in some order.

SPECIFICATION

One benefit of working out a written specification as a first stage is that you and your developers have a shared document to which you can refer back later in the process, and against which you can record agreed changes to the plan (which will probably be necessary). Another benefit is that you have an opportunity to flush out and resolve tensions between stakeholders, rather than having them erupt later at an inconvenient moment. Effort expended in planning is never wasted, as when building a house, certain things (such as the number of storeys, the position of the toilets) need to be fixed early on, because they cannot be changed later without expensive alterations to the fundamental structure (the foundations, the drains).

Here are some of the things that it is important to include in a specification document or to record in some other way:

- the rationale for the resource (its overall aim and purpose, its position within the training strategy or e-learning strategy, relation to any other projects, the immediate and secondary uses of the resource, arrangements for updating);
- profile of learners/users (demographics, educational level, experience of IT and e-learning, how they will be directed to the resource, likely learning environment);
- learning outcomes (what you want the learners to be able to do, or to do better, after study of the resource);
- learning model, or instructional design (how the content is going to help the learners get to the outcomes – for example, through viewing presentations, through action and interaction, through reflection, through assessment);
- scope and outline content (in sufficient detail to establish what is in and what is out, perhaps including a draft structure);
- media (text, photographs, graphics, audio, video, interactivity) and estimated quantities (which is a fundamental determinant of cost);

- IT specification (including characteristics of both network and server, and end user machine);
- evaluation process (when and how you will evaluate the resource, and against what criteria);
- development process, with the people involved (for example, subject matter experts, reviewers, IT, corporate design, user representatives, trainers, senior managers for sign-off), and a view of the critical path;
- resources required (access to people, access to documents or collections, access to locations);
- schedule (including milestones and review stages);
- budget (or other system for cost allocation and control);
- risk analysis (what could go wrong and how the risk can be controlled – not everything can be anticipated, but the discussion is important for building trust and confidence that unanticipated problems will be resolved together).

You may find the biggest challenges come in discussing the scope, learning outcomes and media, because this requires everyone to imagine what the resource will be like on the basis of a plan. (This is at least as difficult as imagining what a film will be like on the basis of a script.)

Specifying the transformation of a face-to-face course

British Telecom (BT) commissioned LMD to develop a 15-minute online course about branding, based on their existing face-to-face workshop, which normally lasted half a day. Despite the disparity in the timings, both parties agreed that this was a workable specification: in the e-learning environment, the workshop content would actually be more effective and have greater impact with its users if boiled down to its essence, rather than being reproduced at full length. Even though the quantity of content was apparently reduced, the e-learning resource was judged equivalent to the face-to-face training, in terms of the learning outcomes achieved.

DEVELOPMENT AND REVIEW OF CONTENT

Except for the shortest of resources, it is wasteful of both time and effort to allow all the content to be written and assembled before it is reviewed. Here are some examples of better ways of developing content, which allow major changes to be made early before a mistaken direction is followed too far.

- **Lead module:** Developing one module or section of a resource first provides a model or template for the remainder.
- **Three-C process:** This applies mainly to text. The first draft is reviewed for Content or Coverage (is the right material present?), the second draft is reviewed for Communication (is the style and tone right?) and the third is reviewed for Completeness (is every detail correct?).
- **Key assets:** This can apply when a resource is organized around certain key assets – for example, learning activities, case studies, or scenarios. Developing and reviewing these first avoids wasting time on wrap-around material for assets that will never be used.

- **Point of no return:** Some types of content – notably video clips or interviews – are sufficiently expensive that their capture cannot be repeated, so marking a point of no return. The implication of this is that all aspects which can be reviewed in advance (for example, the video script, the interview protocol) need to be checked ultra-thoroughly.

If your developers have been through the specification stage together with you, what you receive from them should not be wildly different from what you were expecting. Those reviewing the content, however, if they have not been part of the early process, may misunderstand the nature of the resource, the status of the draft sent to them or what they are being asked to do. Whenever the briefing of reviewers is skimped (for anyone with significant involvement, I would say it should be done face to face), you are liable to receive review comments that are inappropriate to the resource (for example, they really want it to be about something else) or to the stage of the process (for example, suggesting a radically different learning model when they were only expected to make a final accuracy check). Such misunderstandings can, of course, be repaired, but usually only with embarrassment for the commissioner, who may have to disregard comments because there is no longer any way to incorporate them, and resentment for the reviewer because they spent time writing comments which will not be used.

DEVELOPMENT AND REVIEW OF DESIGN AND TECHNICAL OPERATION

If you have an existing design and technical template in which to work, you can probably skip this stage of the chapter. If not, then you need to be aware that design and technical operation are so closely bound up with content that you will probably be developing them all roughly simultaneously. Content authors need an idea of what spaces they are aiming to fill and what technical functions will be available; and you will want an idea of how the resource will look and feel and work. All these are reasons why you will probably want design and technical development to start as soon as the designers and coders have sufficient exemplar content to work with.

As well as generally 'looking good', you may require the design to meet criteria such as:

- conformity to corporate design style, or any specific style for e-learning materials;
- usability – being easy to use, with a clear and intuitive interface and navigation devices;
- accessibility – being usable by people with disabilities, including visual impairment (now a legal requirement in the UK, unless alternative provision is made);
- technical inter-operability with other systems – for example, a learning management system, if you have one, or more simply the organisation's intranet.

Probably the biggest danger when developing design and technical operation is creeping ambition. It is easy to think, as a resource starts to take shape, 'let's have it visually rich', or 'wouldn't it be great if it could do this other technical thing' – and this is a temptation for developers as much as for commissioners! But extra graphics cost time and money, and technical additions may or may not be simple. This is a stage at which it is particularly critical to work out carefully the implications of extensions to the specification.

PROTOTYPES AND PILOTS

Unless your resources are being developed to an existing model, you will probably need to have specific stages at which you test technical aspects on a prototype version or check how learners will react to the resource (a pilot). There are just two rules for this kind of test:

- be clear about what aspects of the resource you want to check, so that your developers can make sure the prototype or pilot version actually includes them and you can brief your testers or pilot group accordingly;
- leave yourself enough time and resources to do something about any problems you discover!

You might want a prototype to test:

- navigation and interactive elements;
- interoperability (for example, with databases, learning management system, other online resources);
- streaming media;
- cross-platform compatibility;
- compatibility with assistive software (for example screen readers for the visually impaired).

You might hold a pilot to check:

- the product concept, perhaps including the learning model and media mix;
- accessibility, for standard and disabled users;
- acceptability (of content, expression, design);
- usability (for example, the clarity of navigation, interface, instructions);
- learning effectiveness.

A large pilot group may give complex or contradictory responses, and you will need to make decisions about which of them require action and what that action is to be. For example, it sometimes happens that a few piloters are completely hostile to the resource, and you need to decide whether the resource is really fundamentally unsound, or whether their responses are just due to cynicism or misunderstanding. You may also want to consider what the responses would have been to comparable face-to-face training.

FINALIZING ASSETS AND BUILDING

At some stage, the developers will probably take away the 'assets' (text, graphics, any audio-visual material) into a (metaphorical) workshop to put them all together, and the next thing you see will be a complete product that hopefully needs only small scale adjustments.

It is important to try to keep your hands off the resource during the 'build', to avoid confusion between different versions of the assets. The developers handling the assets at this stage may be excellent web designers and coders, but they are not necessarily excellent at keeping track of changes to content assets of which they may have no understanding and perhaps even no interest.

The ideal is to get all assets finalized and signed-off first, so that the build is just a matter of pouring approved content into approved designs. Where that is not possible, it is usually

better to keep any further amendments on hold and not to try to implement them until after the build is complete.

CHECKING, TESTING AND INSTALLATION

The first built version of the complete resource ought to come as no surprise if your review of the content and design has been sufficiently thorough, but even so there will be many things to check, such as:

- implementation of the design (does material appear in the right place in the right style?);
- text accuracy (has any text been left out? Have any errors been introduced? is all punctuation, capitalization and so on in house style? – though this last should really have been checked before the build);
- interactivity (are all links correct? do all interactions work? do all media play?);
- interoperability (does it work on the server on which it will run? does it exchange information correctly with its database? does it work correctly with the learning management system?).

Some of these checks can only be made when the resource is installed in its final location, and if it is at all complex, it may take several technical adjustments before it works correctly.

Before handover is completed, you will want to have the developers document how the resource was built and archive the assets used. This will be helpful (perhaps essential) if you later want to update or modify the resource.

EVALUATION AND REVIEW

After the resource has been in use for a few weeks or months, you may want to evaluate it in some way. At the simplest level, you might find out how often the resource has been used, and by what kind of people. You may also have some kind of survey form attached to the resource, or delivered by the learning management system, to gather basic information about learner satisfaction.

Such forms – the equivalent of 'happy sheets' distributed after a face-to-face training session – should tell you if anything is seriously wrong with the resource; but response rates tend to be poor, and they can only provide the most basic measure of training effectiveness. If you really want to evaluate the effectiveness of the resource, you will need to have learners take some kind of post-study test to see how much training they have retained, or have their line managers report in some way on how much their training has improved their work.

After six months or a year, you may want to review the content of the resource, to check that it is still relevant and to see whether any updating is needed. Minor changes to text should be simple; alterations to significant graphics or audio-visual assets are likely to be more difficult and expensive. Some of this can be avoided by careful attention at earlier review stages – for example, in video, avoiding references or images which date the material too precisely!

Costs and timescales

Enough of the why and how; you also want to know what it will all cost and when you can have it.

If you want an accurate quote, you will need to have a precise specification, or to work one out with your developer; you cannot expect to get a precise figure otherwise. But if you only want a very rough estimate of the cost, there are only two really significant variables: the size of the resource (that is, the quantity of material to develop) and its complexity (the media types, the interactivity, the extent to which the content is open-ended). Some developer companies publish costing guidelines based on just these two variables, and working from these, at the time of writing (early 2004) the industry standard seems to be:

	Cost range per study hour, for 3–5 study hours (not including taxes)
Simple resource – text and simple graphics on basic web-pages, no interactivity (except menus and links)	£6000–£15 000
Interactive resource – complex graphics, complex content, simple audio, simple interactivity (for example a few standard types), including export of tracking and test data to an existing system	£20 000–30 000
Multimedia interactive resource, including audio and video, and more complex interactivity	£35 000–45 000

The above table needs a few words of explanation.

- 'Study hours' are one way of specifying quantity of material. The length of a resource, in study hours, is the time it would take an average learner (average, that is, for your target learner group) to work through all the material. Naturally learners may skip parts, or the resource itself may direct them to different sections; but the development cost will depend on the total quantity of material to be developed.
- With a resource that genuinely promotes learning, as distinct from simply providing information, the learner will be spending as much time thinking about the content as reading or viewing it; so, for example, in a text resource you might estimate the length in words as what can be read at an average speed in half the study time.
- Some developers prefer to cost in terms of 'numbers of screens' – which is fine for resources consisting of a large number of screens that are relatively similar, as long as you know how much material goes on one of these screens.
- Unless you are developing a new resource on an existing model, there will be initial start-up costs as you work out what one of these resources is going to look and feel like. For this reason, the first 'study hour' is more expensive to develop than subsequent ones – perhaps as much as double the cost. The figures above allow for that, and are average figures for around 3–5 study hours.

The single most expensive element of a resource, if you choose to use it, is likely to be video. A long-standing industry estimating guideline has been £1000 to produce a minute of finished video material. (For a standard television documentary, the cost per minute might be £3000; for television serial drama, it might be £8000; and for advertising, it might be £100 000 or more.) The actual cost will depend largely on the number of locations at which you film, the number of crew and cast (if you are using professional actors), the complexity of the material, the production quality at which you are aiming, and the total quantity of video material (a small number of minutes will inevitably cost proportionally more than a larger number).

How long does development take? Clearly, it can take as long as you like, although be aware that a development spread over time may cost more because of the costs associated with putting down and picking up the work. More relevant is the minimum time required. From my experience at LMD, I would say you should not expect to develop something from scratch in less than three months – unless the project is unusually small, simple and straightforward in some way.

Developers can only write, design and code so fast, but that is not usually the limiting factor. It is possible to save time by dividing the work among more people – although that introduces additional risks of quality, and more work is needed to make sure the various pieces are consistent. The limit is usually in the development process itself, and in particular the number of review cycles and (with the best will in the world) how fast commissioners can review, comment and approve material. With a minimum of four review stages (specification, first draft, second draft, complete build), and allowing one week for review at each (ambitious in most organizations) and a further week for meeting and deciding what action to take as a result of the review, that adds up to two months immediately, even before allowing any time to create the material!

Thinking about the e-learning development projects LMD has been involved with over the years, I would say that the four biggest risks to a project's cost and schedule are:

- unfocused ambitions, leading to poor initial specification and gradual creeping extension of the project – hence the need for regular careful review;
- source material proving to be unavailable or (more typically) not as useful as was anticipated, requiring time and labour to make good the shortfall – all you can do is to have this checked as early as possible;
- unavailability of key people at critical stages (for example subject matter experts or senior managers for review and sign-off) – precise advance scheduling may help, but the best intentions may not suffice if the schedule slips;
- too many stakeholders trying to control the project, especially those who come in late – hence the need for careful briefing and for limiting consultation to specific aspects at each stage.

All these are essentially the same risks to cost and schedule as you would find in any substantial project. They do not arise from the nature of e-learning. It should be reassuring to know that, whatever else may be new and strange, in this respect at least the challenges you are facing should be familiar!

Conclusion

What should be evident by now – if you were not already aware of it – is that developing e-learning resources is a significant investment of time and money. For that investment, you will want to be sure that you get what you want – and your best chance of getting this is being clear about what that is. Good developers, whether in-house or external, can help you achieve that clarity, by showing you options, exploring alternatives, working through implications. And that is what I have tried to do in this chapter, outlining the different aims you might have, the combinations of people and resources you might want to use, and the processes and problems you might go through to develop your resources.

I have aimed to summarize the range of possibilities and issues with sufficient detail to make them clear, which may have made this chapter feel complex. In your own situation, you will be able to concentrate on those that are relevant to you. As I hope has been amply illustrated, e-learning resources are not just one kind of thing. Successful development begins with working out which of the many possible alternatives will be right for you and your organization.

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