<title>BRIEFING PAPER</title>

<subtitle>

Managing the Development of Successful eLearning Programmes

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Introduction

With the high availability and growing ease of use of on-line learning environments like Moodle, Blackboard and Canvas, it has become much easier to create on-line courses. However this ease – which often means hand-building courses directly in the virtual learning environment (VLE) – comes at a cost, as institutional design, strategy, vision, etc. are usually ignored.

While it may seem cost-effective for individual educators to build this way, it quickly becomes prohibitive when this is scaled up for programmes that are seriously used and tested by hundreds of students undertaking a whole programme. Such larger developments benefit from **standardised course designs**, from applying **specialist skills** such as graphical illustrating, and from adopting **content engineering** techniques to reduce the level of hand editing involved and to generate outputs in multiple formats.

Developing affordable eLearning programmes that can scale therefore requires a different development approach, and one with four key stages:

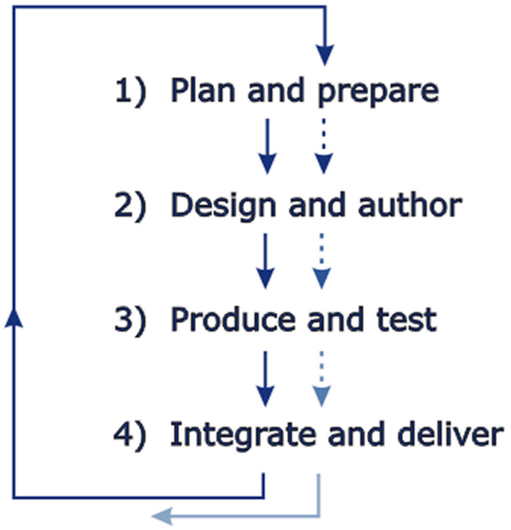

Figure 1: Programme Development - Key Stages

Each of the four key development stages contains key issues to be addressed, and this paper highlights some of the key ones. Successful programme development is not the same as programme delivery, which comes later on, usually after many years of offering and supporting a quality programme that proves fit for purpose.

We've only built twenty programmes so far - the biggest being the largest non-tutored on-line eMBA programme in the World. This currently has 11,800+ students on it, and it has generated more than £150 million for Edinburgh Business School since its launch. If you have experience beyond this please let us know, and we'll aim to incorporate your comments into future updates to this paper.

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Plan and prepare

Before continuing, you might like to read our briefing paper entitled "Avoiding the VLE Trap" to understand the reason for developing a programme independently of any existing learning management system you may already have.

Next, note that if your intention is to build a programme that will attract hundreds or thousands of students, you are actually setting out to build a **business**. Why? Because to service that level of commercial activity, you need all the administration, technical, product development and business infrastructure that good quality education service providers must have.

If you are trying to do it from within an existing institution (College or University), you are unlikely to find the **student oriented** administration systems or cost-effective **production expertise** you will need in-house. You will probably encounter **barriers** to operating efficiently, such as the ability to personally reward and motivate subject authors to deliver materials on-time and to specification, or constraints that restrain you from minimising the cost of the human components of your programme, preventing you from reaching break-even in a reasonable time scale.

In short, you need to develop a plan for the business. For that you need to: model the business in a way that will: remove all barriers to efficient operation; address and resource all key business processes including sales, academic support and accreditation; secure the commitment of essential third party partners; and share the eventual rewards appropriately, according to contribution and the level of risk adopted.

Product (programme) design is a key component of the business model for eLearning. It needs to be complete for each of the markets you target, and this is an important consideration for the next stage.

Design and author

eLearning programme design takes a selection of **content**, **human** and **technology** components and builds them into an on-line course environment that fosters effective teaching, learning and professional development. Each of these three components can play a leading role in the design, but content in particular is important for coping with large volumes of self-motivated distance learners. Many people know this stage as 'instructional design' but we prefer to call it **content interpretation** – and there are many possible interpretations if the content is rich in structure and semantics.

Good quality content, sourced appropriately, written well and produced

flexibly, will also support multiple different study modes – from independent self-study to face-to-face classroom delivery. It can be readily adapted to address a 'course map' of specific learning objectives, and assessed to deliver personal outcomes. It can also provide **independence** from learning management systems and subjective instructional design, and it can (and should) form the basis of a tacit repository of knowledge for any subject or profession.

Standards based content, formatted using XML and other open standards, enables the development of a vendor-independent repository of content assets, which appreciate in value in time and re-use.

Good quality content readily available, greatly supports the people component of course design too, equipping tutors or learning support staff with time saving resources addressing difficult issues, and helping students to assess their suitability for the course.

eLearning content authors don't need to know the details of the technologies being used, but do need an appreciation of the benefits of interactive content delivery so they can use them to best effect. Embedded applet simulations can turn a dull tutorial into an interesting exploration of an algorithm or a dynamic colour design wheel. Knowledge of question types that go beyond simple multiple-choice questions and rubrics that enrich feedback to students, can turn on-line assessments into much more formative learning experiences.

Design and authoring is where the key components of the programme are brought together to make a successful, sustainable commercial offering.

Produce and test

eLearning programme production is all about producing the highest-possible quality product and putting it 'on the shelf' for sales and use.

The cost of a fully-skilled production team may be difficult to absorb for the development of one eLearning programme, particularly as this is a long-term cost and commitment and one cannot be certain about sustained success. There is a dilemma. Do you invest in your own in-house team permanently, or do you outsource production completely? What you will obviously retain in-house is those elements that you are good at – the development of educational content – but anything else is probably a distraction at best or a financial millstone at worst.

Funding a permanent production team of at least three and probably five developers is expensive, and re-skilling them in single source publishing with standards is technically challenging. This is one reason why the temptation to hand-build in HTML within a VLE is still considered to be an option.

Few educational institutions cope well with this challenge, and even fewer education business start-ups manage this in the long term. While outsourcing is an attractive solution to this problem, in practice it can lead to loss of control,

particularly where the programme management team isn't technically strong enough to evaluate the different possible technical options in producing eLearning materials, and hence able to appreciate their asset-building value to the business.

The key in choosing between these options is to understand from day one that a large part of building an eLearning business is about building a domain of reusable learning materials, fit for any task the business and educators need.

This means investing in flexibility, semantic mark-up (as embodied in an XML approach), and an information architecture that extends across all of your content to provide operating consistency and efficiency. In parallel, build the production tool capability you need to output from the domain. Be able to batch typeset complete course sets in minutes to professional print standards, and batch generate thousands of web pages from your learning materials masters in seconds, to load into your on-line learning environments.

Apply the necessary but expensive design effort sparingly at the start of programme development, to establish the semantic content templates for your critical course components (study guides, lessons, tutorials, assessments, case studies, discussion papers). Don't use it to build the actual components themselves. Instead, content engineer the remaining volume of them using well trained authors to provide all the necessary materials, and suitable developers to capture the content semantically in large volumes.

In short, unless you are a large education provider with money to retain large teams of developers permanently:

- find a production capability that is smart at the start, efficient during the volume build, and not a cost millstone around you neck when you no longer need all of it;
- keep minimal management and design skills permanently in-house, and outsource the rest to teams constantly developing new programmes for multiple education providers and programme designs;
- insist on standards based production where you keep all the assets;.
- put in place a long term content maintenance agreement to start at the end of the production phase, to retain the ability to update re-produce, and to cherish the assets created.

Get this part of the programme development process right, and you will have the 'engine room' in place for your eLearning business.

Testing eLearning materials thoroughly can be expensive, but having single-master sources of your materials offers unique efficiency gains and business benefits. Custom test datasets can be rapidly generated for specific testing purposes such as proof-checking or copy editing. Automated test queries can be run across the structured masters, looking for critical omissions or inclusions using the semantic context to spot them e.g. missing or out-of-range mark values in assessment questions.

As this effort is made, the single master sources steadily improve in quality, with minimal error re-introduction through human contact. The testing capability also accrues, helping to improve operating efficiency. Operating batch production processes which can easily re-generate new versions of the eLearning product, makes implementing corrections and re-releasing them across multiple language versions almost costless.

Implementing all of these quality improvement developments across an entire domain of multiple eLearning programmes, can lead to the enviable operating position of having quality and operating capability improving while costs are coming down.

Integrate and deliver

eLearning programmes are really delivered in **managed learning environments** that host three core business foci:

1. production;
2. delivery;
3. administration.

Close integration between all three components is hard to achieve when they are individually sourced, but the recent moves of information technologies towards open, service oriented architectures means it is becoming more achievable. This is good, because it is highly beneficial.

Integrating the programme development environment more closely with the on-line delivery environment or VLE, creates a "two-way street", where fully-indexed content can automatically flow into the VLE with little human intervention, and its performance in the VLE can be profiled and fed-back into the production environment. This is particularly useful for assessment materials, in that it can help to identify poorly performing questions and assessments.

Closer integration:

- between the **production environment** and the **VLE** also means that any new content created in the VLE can be moved across into the production environment, and re-produced, re-used and re-released more widely from there.
- between the **production environment** and the **student-oriented administration environment**, means for example that information about content versioning, errors and uses can all be recorded against the programme context. Administration environments can be primed with content that underpin their ability to hold richer student portfolios. Course sets can be compiled with administration sourced information on preferences and learner profiles.

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Summary

Developing successful distance and e-learning programmes, and bringing them to market, is a substantial process. It requires investment, commitment, content and management.

The cost benefits are known and have been covered in earlier CAPDM briefing papers e.g. "Cost Effective Production". However, the strategic benefits are even greater and achievable. The improvements in quality for your teaching and learning materials and processes are tangible, and immediately evident to students. It is transformational, in that once completed, it will be a permanent change for the better to your way of producing and managing learning materials.

It does require you to decide which bits of the process you want to retain in-house and resource to do yourselves, and which bits (if any) you want to outsource. Finding a production or marketing partner with experience in doing it well is invaluable, but should still leave you with the flexibility to be able to do it in-house too, since it is a core process and one you are likely to repeat many times in the future.

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