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BRIEFING PAPER

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Bricolage vs. Engineered Learning Designs

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Introduction

There are many benefits to be gained from systematising and standardising in the educational arena. At the qualification level, it is useful to be able to compare qualifications so that students can be placed at the learning level which is appropriate for them. At the next level down, it is the aim of many educational systems to provide a means by which students can move from one part of the educational spectrum to another through recognition of their learning experiences in a framework (such as the SCQF which provides a means of comparing various levels of qualification) or through credit-rating learning experiences so that those initially outside of the framework can be brought into it.

One of the standardisation tools available at the more detailed level is the IMS learning design framework within which all learning experiences can be described (IMS, 2003). This framework prides itself on being method and mode agnostic. Adherence to the framework as a standard means that in the same way as educational awards can be transferable, so can learning experiences. The framework focuses on the activities that students undertake to achieve learning (Koper, 2006) and assumes that learning content is made available or discovered by students as part of the learning process. It does not provide a standard for learning content, but it is reasonable to assume that the advantages of a standards framework, consistent quality and recognition, and transferability, would also be true of learning materials - particularly in a distance or blended learning context.

This separation of learning activity and content is emphasised in the two ways in which we most often approach the development of online learning experiences.

Bricolage approach to online delivery

The literature indicates that many academics (rather than materials developers) working with electronic delivery of a learning experience prefer a bricolage approach (also called a morphing approach) (Berggren et al, 2005) where they can modify the learning experience on the fly. For the course presenter, there are obvious advantages to this approach, allowing him or her to get up and running with a minimum of training and time invested, and then modify materials and activities as they become more familiar with the virtual learning environment (VLE) and with the learning styles of their students. In some sense, however, this does mean that real students are being used as a test ground which is not necessarily fair on them. In this model, one would expect students in later iterations of the course to have a much more coherent learning experience.

The main advantage of this type of programme delivery is that it can be personalised and adapted to learner's styles and needs as they progress through the course, and as they become more familiar with learning at a distance. The functional tools available in the learning environment can be brought in and used as students need them, or as a particular approach becomes educationally sound – the programme presenter can decide when to use the group tools and may, for instance, introduce project-based activities at appropriate points.

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Modifying the learning experience in this way means that students are provided with constant stimulation which has been shown to keep motivation high. The programme presenter can also keep materials very up to the minute, with news feeds, links to web pages dealing with current issues, and so on.

However, one should not assume that there are no drawbacks to this type of delivery. Over a number of modules, students may become confused or lose their way with different styles of presentation. With learning materials shifting and changing, it becomes difficult to standardise and difficult to compare and evaluate one learning experience with another. Therefore, the advantages noted above of standardisation are not realised and reusability is not easy. While multiple media and variety may keep some students motivated, it is also possible that over-stimulation may detract from the content of the experience and focus students more on technical process (which buttons to press) rather than what they need to learn. Finally, the bricolage model requires a great deal of ongoing tutor input and can, therefore, be an expensive way to approach eLearning for any significant number of students.

Engineered/ content-complete approach to online delivery

In contrast, the 'traditional' distance learning approach is to prepare detailed materials covering all aspects of the theory involved and wherever possible 'building in the teacher', anticipating student problems and dealing with them in the materials. This engineered approach allows for carefully designed, content-complete materials to be delivered to students, with features built in that are known to lead to successful study.

The separation of the materials preparation process from educational delivery, can facilitate mass delivery with economies of scale. It is particularly valuable in areas where the content is relatively stable. This is often most true for first-year subjects, where a firm foundation based on established concepts is required, and these are the very areas where economies of scale are of benefit. Because materials can be designed to a common template, students know what to expect even over a number of modules, and as the structure is familiar, they can concentrate on content. Using a common standard to create materials means that parts or whole modules can be shared, compared and evaluated. This approach means that the author of the materials has to plan the materials in advance, making it easier to ensure sound linkages between learning objectives, learning outcomes, theoretical content and assessment.

Despite the advantages of preparing learning materials in this engineered way, there have also traditionally been a number of drawbacks. It is harder to keep materials prepared for print or even online delivery up to the minute. In order to ensure that the materials are accessible and useful for all learners, they tend to be aimed at the individual learner who has little support, and therefore build in as many automated or text-based features as possible. But materials built in this way do not easily lend themselves to providing a truly personalised learning path. There are unlikely to be options for delivering to groups or modifying the

learning process to accommodate emerging learner needs. Finally, without up-to-the-minute input, students may become complacent, or even bored, passive absorbers of materials, rather than active learners.

Combine the two approaches

The bricolage and engineered approaches have been presented as opposing ones in this discussion, and indeed that is the way they are often viewed within education and training organisations. However, it is clear that students would benefit from the strengths of both models.

A solution can be found in the CAPDM model of using structured materials with a standard set of features which would enable the materials to be used in a traditional distance-learning environment by a single student, but also doing this in such a way that delivery in a virtual learning environment which allows the bricolage approach is enabled. The theoretical materials can be prepared in advance and engineered for successful study, and the academic can then mount the rest of the learning experience on their VLE around this building block. Because the preparation of materials is separated out at the beginning to the process and brought back into the VLE only at delivery stage, it is possible to outsource the technical preparation process. This mimics the quick up-and-running feel of the bricolage delivery approach while ensuring that students have a firm theoretical base from which to participate in online activity.

The basic content building block is by no means a dry and passive learning experience as it has been accused of being in the past. Particularly if it is delivered electronically rather than in print, the theoretical content can include interactive elements with pre-programmed responses, case studies, links from test questions directly back into relevant parts of the text, online simulations, and so on. In fact, with the latest technology and sophisticated use of available tools, many of the cons of the engineered solution can be overcome or at worst minimised while still providing a cost-effective and learning-effective base.

Conclusion

Looking at the development of learning experiences from the point of view of the 'old way' and the 'new way' may mean that we do not take full advantage of the benefits that both a bricolage and an engineered approach can offer students. Recognising that they are complementary rather than opposing approaches can result not only in a rich repository of learning materials with all the benefits of a standardised format, but also a well-founded theoretical base for student learning delivered with the dynamism and flexibility of a VLE.

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