

DESIGN TOOLS FOR E-LEARNING

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Summary

The technical work on the definition of a system architecture for e-learning is progressing well. It has some funding; it has the backing of powerful commercial forces; it has attracted highly-qualified people to work on this fascinating and challenging problem. The work is formalising the way basic services will be shared across digital applications, and how data will be passed between them. However, at the level of the learning activities the system will support, the structures are not defined.

Describing the standard structures for learning activities

Defining the open standards for the component services of an e-learning architecture will be of clear benefit to the academic community. It will enable the easy transfer of learning materials and environments across systems, and will enable designers to use standardised services and applications in the structure of their particular learning activity. The educational design community should welcome such an approach as creating in the digital world the easy use and re-use of teaching that we are accustomed to in the analogue world. Teaching was easier when you could carry the printed list of your student group from the registrar's department into your class, and distribute a photocopied diagram to support your lecture. In the digital world, there is no guarantee that the student administration environment will transfer data into your website, and no guarantee that your colleague's nice powerpoint slide will plug into your online lecture notes. Open standards and an e-learning architecture will return us to that simpler world of easy interoperability, if only we can agree them.

However, standardisation of the basic architecture raises questions about the constraints it might impose on the design of learning. This is one reason to attempt to define the standard forms of e-learning activity. It provides a way of approaching the definition of the underlying architecture from the point of view of the top-level, learner-oriented description of an e-learning system. It is a way of ensuring that the architecture is at least benign with respect to the ambitions of teachers. We should be able to challenge the architecture to meet the requirements of the most effective learning activity models. But what are they? The educational community is not in a position to say. We have no agreement on identifying the most effective learning activity models.

There would be great value in a programme of work to identify effective learning activity models, and build standardised descriptions of the forms they take. It would embed pedagogical requirements in the norms being developed, It would help to develop and disseminate good teaching practice. It would provide an engine for progressive improvement of the quality of e-learning materials and services. And it would serve to challenge the technology-driven e-learning services and applications standards to meet the requirements of effective learning and teaching. But standardised descriptions of forms of learning are surely inimical to the freedom to innovate in teaching?

Consider an analogy with the traditional standardised forms of learning – the lecture, the textbook. These are highly standardised, placing considerable material and unalterable constraints on the form of teaching that can be done. The blackboard offers a customisable form of display, but of a very restricted type. The textbook offers a customisable form of articulation of ideas but restricted to a particular size and length of unalterable print. We are certainly used to standardised forms. And they have their advantages. As the early books gradually standardised on structures such as a contents page, chapters, paragraphs, footnotes, appendices, an index, and so on, these features were readily copied as valuable innovations, enabling the transfer of good design practice leading to more effective reading materials. Standardised forms of learning activity, therefore, need not be seen as unnecessarily restrictive, but rather as capturing good practice that can be transferred, modified to improve practice, and customised to the particular requirements of the designer. If anything, they could even facilitate innovation, good practice, and effective teaching.

Generating learning activity models

We may not have an agreed set of characteristic forms of effective e-learning, but it is possible for the educational community to identify some effective existing learning activity models. These would embody good design practice of a kind that might impose requirements on the underlying e-learning architecture. By analysing the essential characteristics of a range of proven learning activities, we can generate a set of requirements for the architecture to support. For example, a proven existing learning activity might enable students to work simultaneously across a network on a design tool, such as a graphics program, and share the results in separate windows. This learning activity therefore generates the computational requirement that it should be possible for 'any' shareable application to be used in this way.

The collection of essential characteristics that results from this process will have lost the pedagogic structure embodied in the original learning activity, unless we find some way to preserve it. A learning activity has a certain internal structure, binding together the characteristics generated by the analytical process of comparison. The internal structure will have a form that could also have existence in a computational form, such as a generic, customisable shell. An analogy would be Microsoft's Powerpoint program. It has an internal structure that sequences slides, which are themselves customisable by the teacher. The program is a very restricted form of learning activity model for a purely presentational form of teaching. The internal structure is important, because it defines how the characteristics work together. In the case of Powerpoint, it restricts what can count as a slide. A better shell would allow the teacher to incorporate Flash animations, for example.

To preserve the pedagogical structure of the original learning activity, we would need to produce more than just the analysis of good design characteristics, therefore. We also need to produce a set of learning activity models that capture the good practice embodied in the original activity. It would enable other teachers and designers to use and customise these general forms, just as the author customises the form of a book. The question is, can we arrive at computationally well-formed descriptions of such models and their component characteristics that are useful both for those designing the architecture for e-learning, and for those designing learning activities? And can they take a form that is simple enough to place the control of learning design with the teacher, rather than with the software designer? Can we imagine being able to generate design tools for e-learning? It is a considerable challenge to both academics and software designers.

The presentation will offer an argument for the development of design tools for academics, using illustrative examples, and will consider the feasibility of such an approach.

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