

Wolfgang Greller (2005).
Managing IMS Learning Design
Journal of Interactive Media in Education, 2005(12)
[jime.open.ac.uk/2005/12].

Published
25 August 2005
ISSN: 1365-893X

Managing IMS Learning Design

Wolfgang Greller

Abstract:

Taking IMS Learning Design (LD) beyond the domain of researchers and programmers, this short paper looks at some of the challenges of mainstreaming it within institutional strategies, processes, and cultures. The experiences of embedding EML at the Open University of the Netherlands will be taken as a reference framework for stimulating managerial attitudes, and thoughts. The paper also intends to provoke some discussion and reflection on cost benefit of Learning Design in a higher education environment.

Keywords: IMS LD, Learning Design, Implementation, Management, Mainstreaming, Impact.

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1 Introduction

With the emergence of learning activities for online learning and the more recent adoption of IMS Learning Design, institutions need to ask themselves a number of fundamental questions. At present, the specification is still firmly in the domain of researchers and developers, but it already begins to emerge from the shadows of the code. Its primary audience in previous academic articles were learning technologists and design experts without major involvement of the key stake holders, the academics and managers. This paper is taking a step into the direction of a manager's perspective and the barriers and challenges facing the institutional implementation. In particular, I will take the view of my own institution, [UHI Millennium Institute](#), a networked higher education institution (HEI) of small student numbers and economies.

As I hope to demonstrate, a number of challenges posed to the mainstream implementation of IMS LD do not necessarily arise from the degree of willingness or readiness of the institution (although this may depend very much on institutional attitude towards innovation and risk), but from the economies dictating the pace.

2 Adoption of EML in OUNL

The chapter by Janssen and Hermans (2005) on 'How to Integrate Learning Design into Existing Practice' provides an invaluable starting point for developing institutional thinking based on the experience of the Open University of the Netherlands' (OUNL) implementation and experience of EML, the Educational Modelling Language which is a precursor to and formed the basis of the IMS LD specification. The authors convincingly argue that the difference in processes between EML and IMS LD is negligible, so we can take their experience of the former as a guide for the latter. Once we accept this, we are presented with a number of how-to features, elaborating how to get started, how to design, how to create, and how to deliver.

In this brief elaboration I won't go into the first and foremost question that all managers and strategic planners have about new things: why should we do this? Firstly, because the arguments have been presented at other occasions (e.g. Koper, 2005; IMS 2003), and, secondly, because if we don't have an answer to the 'why?', we don't need an answer to the 'how?'. Instead, I want to throw some light on issues arising from planning an institutional deployment of Learning Design at higher education level.

3 Planning the implementation

Following the convention of using capitalised initials for the technical specification and lower case for the generic domain of educational design, we will find that in a higher education context a large proportion of the implementation needs to address learning design rather than Learning Design. This is to say that the first step would be to raise awareness of

pedagogy, something that the nature of higher education tends to hide from its users, the lecturers and students.

Contextually, this distinction between ld and LD is tightly connected to the question of who in the institution should own Learning Design. This may at first sound trivial. While there can be little doubt that e-learning will eventually converge with learning and teaching at some point in the future (cf. [HEFCE e-learning strategy](#), 2005), currently, many UK institutions operate an e-learning strategy that is separate from their learning and teaching strategy, and both of which are managed by a different set of people.

In my role as Learning Environments Manager I have the advantage of bridging the technical and academic sections of the institution which allows me to look at both sides of the argument: firstly, the technical spec and associated tools, and, secondly, the academic practices. This position helps in developing an appropriate workflow and administration pattern through holistic strategic planning.

4 The right tools

An important point that Janssen and Hermans make (2005, p.254) is that the choice of tools determines the workflow and the efficiency of the design and publishing processes. We can add to this the observation, that the tool can also be an enabler or a barrier to pedagogic practice.

Most Learning Design tools are in their infancy, be it authoring tools or players. However, it is expected that they will develop fast and perhaps a greater choice can be expected before long. Two very positive recent developments have seen the Australian Open Source products [LAMS](#) and [Moodle](#) move into the direction of IMS LD, both of them promising support for LD level A at their next release and levels B and C after that.

There are a number of factors that will contribute to a tool's success or failures. Among these, the most important in my opinion are (1) how well they integrate into an existing e-learning architecture, and, (2) how easy to use they are for academics.

The set of LD tools required can be identified in the following way:

- a. authoring tools
- b. storage and discovery tool
- c. player

In the anticipated 'toolflow', the authoring tool has export functions to the player as well as the repository. Naturally, each of these tools or toolsets come with their own processes and services such as authentication, authorisation, and administration to name just a few.

There can be little doubt that LD players need to be attractive and suited for students and tutors as they are the applications facing end users. Authoring tools on the other hand are a

different beast, or are they?

In my opinion, what we find in higher education reality is a wide variety of pedagogic awareness and practice among academics. Taking the experience of the wider software arena into account we find that 'morphable' tools are the most successful in the market - that is tools that grow with the user's understanding, have a high degree of usability and covering the novice as well as the expert, e.g. MS Office, Adobe and Macromedia products. My prediction would be that such morphables will best cover the breadth of academic practice and be the most successful in learning design. This would aid the workflow interaction between lecturer and designer greatly as they could both use the same tool, and, equally important, it allows people to develop higher levels of usage without learning new tools.

5 Integration

Over the past years, most universities have put in place a systems' architecture for e-learning which they intend to extend and develop further. Among the closest related to a potential deployment of a LD player platform are learning management systems (LMS) also known as virtual learning environments (VLEs) and digital repositories. Work has already begun to integrate the Learning Activities Management System (LAMS) with some platforms and most recent promises of integration between LAMS and Moodle raise hopes of more such developments. However, the discussion with the wider community has yet to intensify as many open source developers seem to struggle with the concept of the Learning Design specification (cf. discussion on moodle.org).

Integration with user and resource systems, authentication and authorisation engines, synchronous and asynchronous communication tools, and portals has to be as painless as possible. This needs to encompass import and export functionalities, e.g. to transfer test results to the student record system, or to allow tracking across resources, services and activities. The inclusion of query tools maybe a good additional functionality that would ease the planning of availability of bookable resources such as remotely controlled assets (e.g. telescope) or even offline resources.

Integration has to happen not only on the technical level but also on the services' level. If the deployment of IMS LD is expected to have a lasting effect on online teaching and learning it needs to be financially and otherwise sustainable. An economic model for a sustainable service structure supporting Learning Design will have to be found. In this, the capital expenditure (capex) is usually the lesser stumbling block while operational expenditure (opex), which includes human resources, is usually met by fierce resistance in stretched institutions.

6 Workflow

Recent UNFOLD meetings and online discussions paid considerable attention to the question who the authoring tools should be for, the expert learning designer or the novice academic lecturer (Griffiths and Blat, 2005; deVries, Tattersall and Koper, 2005). The answer to this question determines the workflow and the processes required for larger scale, ongoing, and institution wide production. Speaking for an institution of small economy, there is no doubt in my mind that Learning Design has to be owned by the academics. Unlike bigger institutions, and especially distance learning ones such as the Open University, which often even have their own production department for learning materials, in smaller institutions it is at present rather unlikely that new specialist posts can be afforded to support the development of LD Units of Learning.

Even though the OUNL trials included intervention from educational specialists and graphic designers who were set up in teams with the subject experts (Janssen and Hermans, *op.cit.*, p.255), their workflow experiments have, perhaps unsurprisingly, brought to light that allowing staff to construct at their 'hearts desire' leads to a multitude of designs. This variety leads to a number of problems: (1) they may take a long time to develop; (2) they may have very different granularity; (3) they may vary in pedagogic quality (applying a technical standard does not guarantee appropriate teaching strategies!); (4) they may not easily be reusable as complex personalised designs may not be readily understood by others.

For these reasons providing guidance to the authors is critical for success. The OUNL used templates to this end, although they concede that it puts pedagogy in a straight jacket and leads to a limited choice of designs. It does, however, speed up the development process.

7 The economy of time

As with all new developments introduced into an organisation, the calculation of cost and benefits need to take into account the time and effort required to train and support staff until they become proficient in the new system. Highly usable tools come with a clear advantage in this as less training is required. The same is true for the concept of Learning Design and the associated potential applications.

One of the weaknesses of higher education institutions is the lack of managed continued professional development. Staff development is largely based on perceived needs by the lecturers, not need of the institution. Not only does this lead to a considerable delay in roll-out of systems that may be core to effective business, it also requires the managers to 'sell' a change to every single stakeholder. Introducing learning design into a higher education institution may therefore come with a substantial transition period before the concept is understood, the workflow is in place, and the legacy material has been reviewed.

Although the Learning Activities Management System (LAMS) can be described as a very intuitive and end user friendly application, a trial at my own institution concluded that an activity the students got through in less than 2 hours took about 6 hours to prepare.

Nevertheless, the trial recommended the adoption of the system under the conditions that support and training was made available. Some hope was expressed that once learning sequences had been constructed time savings were possible.

8 The 'knowledge refinery'

A particular challenge to the implementation of Learning Design in higher education comes from the cultural notion attached to it and the inherently different educational culture in this sector. The school sectors, the open and distance learning sector, as well as the commercial and military training sectors follow mostly an industrial-style delivery model which almost exclusively passes on tertiary knowledge in a predefined way. This means that knowledge is constructed somewhere else, as is in many cases the method of transmission. This model lends itself very much to reusability where the tutor can vary easily as the content and method remain the same.

Despite the recent blurring of the dividing lines the university model is still quite different. In this environment knowledge management and its transformation into units of learning has to look at how knowledge is created. Universities by their very mission of conducting research and innovation are continuously breaking new ground and are at the forefront of the ever extending frontier of human experience and human knowledge. Knowledge in itself is worthless unless transmitted and shared with other humans. This requires a review and refinement process by the knowledge creators in order to prepare complex ideas for transfer in an intelligible format - the first step of learning design an item of knowledge ever undergoes. In reality this first learning design normally happens within a confined scholarly community of researchers via e.g. conferences, PhD theses, or other means of publication.

Over time more people are involved in the refinement process and the longer the process lasts the more established the knowledge and the more refined the transfer process becomes - in this way nebulous unstructured knowledge becomes well defined and structured for transmission, i.e. learning.

Casey and Brosnan (2005) describe the perceived lack of pedagogic background in wide parts of the lecturing community as the symptom of an 'unskilled workforce'. This is only partly acceptable, that is if one looks for school teacher qualities in a subject expert. It neglects the idea of non-linear learning and self-acquired but uncertified pedagogic skills that many lecturers possess. Additionally, one has to recognise the differences in learning design that are required for transmission of knowledge in this particular community due to the difference in audience and the difference in maturity of the content. Unlike in other

educational establishments the underlying transmission concept is based around defending an idea rather than acquisition and replicating knowledge. The paradigm of proto-typing learning for mass-delivery does, therefore, not easily fit into the cultural and economic model of most universities. It will remain to be seen to which extent the Learning Design specification lends itself to support this aim.

9 Reusability and other benefits

Reuse is where the delivery model of the open learning institutions such as OUNL is at a clear advantage over brick and mortar higher education institutions. There is a noticeable lack of sharing and reusing resources and/or pedagogic strategies between academics outside education departments, which is maybe due to what was said above. However, strong efforts are being made by institutions to change this with the support of national agencies (cf. Casey and McAlpine, 2002). The development of a culture of articulating and sharing your pedagogic strategies and content is essential to reap the benefits of design for reusability. Especially economically challenged institutions are hoping to make long-term efficiency gains in this way.

Additionally, there maybe other benefits arising from the introduction of learning design into higher education, that were not originally anticipated. In our institutional LAMS trial, an 'unexpected' outcome was the enhancement of reflective practice by staff actively questioning their learning design before, during and after delivery of their sequences. Using a learning design tool made them reflect why they were structuring sequences in a particular way. IMS LD may therefore serve as a staff development tool and as a quality enhancer even if only by alerting institutions of how to recognise lack of quality.

10 Storage and retrieval

Learning Design was developed with reusability in mind. This implies strongly that sequences are not only delivered once, but archived and published in a way so they can be discovered. They then need to be made available in a usable format. A whole separate workflow of packaging, uploading, cataloguing, metatagging, publishing, rights management, etc. is required to offer this service.

Provided such a service can be created and sustained, a number of questions arise from it. The obvious one is where and how to store units of learning (UoLs). A separate repository for UoLs would create yet another data silo and would pose serious challenges to an integrated approach. Using an existing digital repository and packaging UoLs as learning objects may therefore be a simpler and more effective solution, but raises further questions. While the LD spec allows UoLs to be packaged as learning objects, applying the available metadata schemas such as UK LOM, IEEE LOM, IMS LRM or Dublin Core would stand in the way of reuse, for a client system might not be able to differentiate between what was

content and what was an activity structure, neither would arguably the user retrieving such a package. Additional contextual identifiers - so-called extrinsic metadata - would therefore be needed to allow search and retrieve functionality for UoLs. The value of subjective metadata (cf. Slater, 2002) to make resources more reusable has also increasingly been recognised by the Learning Design community.

A more complex scenario can be envisaged with nested objects, where a UoL contains content objects (either referenced or embedded) and is itself stored as a learning object. This would require deep searches to be available.

Granularity and the reuse of parts of UoLs, so-called patterns, are other issues that still await answers. These may only emerge when more experience is gathered collectively in the LD community. Janssen and Hermans (2005, p.262) explicitly note the requirement of a thorough content management strategy.

To sum up the issue, LDs by themselves are of limited value without a bundle of surrounding documentation, metadata, and taxonomies (Griffiths and Blat, 2005). While these have to satisfy usability criteria that make it worth while storing UoLs, they also need to be balanced against the cost of creating and maintaining them. Templates for narrative descriptions and open text search could be an economic way of achieving reuse.

11 Outlook

Convincing academics of the benefits of designing for sharing and reuse is only one aspect, providing the necessary tools and support is another. A recent report on the 'Effectiveness of Resources, Tools and Support Services used by Practitioners in Designing and Delivering e-Learning Activities' (Littlejohn, 2004) includes contextualisation, adaptability, usability and mapping to existing practice as key elements for successful interventions. These will also contribute to success or failure of Learning Design.

The above mentioned challenges are not insurmountable for institutions with the will to implement Learning Design in their practice. However, they need to be resolved within the constraints of the local institutional economy and change culture. Especially for smaller institutions there may at present be enough barriers here to decide not to join in just yet. It will be up to the Learning Design community to show that workflow models can be established in a way that provides fast and easy benefits.

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