After The Deluge: Navigating IPR policy in teaching and learning materials

WORKPACKAGE 1 - 4:
Objective: Initial targets for policy creation

Activity 17. Using the outputs of the preliminary analysis, the educational applications of learning objects, the typologies of repository content and DRM functions to develop initial descriptions for policy creation targets

Deliverables: Report – bringing forgoing work together to produce a range of policy targets

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Note this article assumes some familiarity with these concepts: Learning *Objects*, Metadata, *Educational Standards for Technical Interoperability*, Digital *Repositories* and *Learning Design*. For a useful quick introduction to each of these concepts please follow these web inks:

Learning Objects (Content Packages) & Learning Design
http://www.cetis.ac.uk/static/briefings.html

Metadata
http://www.cetis.ac.uk/content2/20050210042132

Educational Standards for Technical Interoperability:
http://www.cetis.ac.uk/static/standards.html

Digital Repositories
http://www.jisc.ac.uk/index.cfm?name=pub_repositories

1 Summary

The law does present a challenge to the education sector when it comes to the reuse and sharing of digital learning materials. But as we argue in this document and the other TrustDR project outputs the cultural and institutional barriers to sharing and reuse are far more formidable than the legal or technical ones. We think that if these 'soft' factors are taken into account when planning to manage IPR in learning materials there will be a much higher chance of success. We also think that if approached systematically and with consideration for the reality of people's working conditions then the implementation of an institutional DRM (Digital Rights Management) system could also play a role in embedding e-learning in a more sustainable and coherent manner than exists at the moment. It is understandable that many people associate DRM with technology (digital), however it is our view that most of the work involved is legal and cultural (rights management). In this domain it would be very, very easy to spend a lot of money on useless (and pointless) technical measures. We propose that most of what we need can be (and needs to be) achieved with 'lo-tech' and 'no-tech' solutions.

For teachers and their institutions to successfully use a DRM system we would suggest that it is fundamental to accept the following:

- You should be able to account for the origins of all the materials you use in your teaching activities especially those of third parties
- You should be able to attribute the sources of your teaching materials
- These abilities are basic scholarly skills - not to do so would be considered as plagiarism in students
- This is the foundation of effective DRM in Teaching and Learning Materials
- You don't need any legal knowledge to do any of this, nor do you need any hi-tech kit
- Without this information you and your institutions will not be able to determine whether the materials are legal or not – in the case of a dispute or prosecution not to be able to produce this information would be considered as negligence
- When you place materials on a Website, VLE, blog, wiki, etc. this is effectively copying and publishing - an activity that is governed by the law of copyright as well as other laws – whether or not access is controlled by password
- You and your institution are liable under the law for your actions
- The cash value of most of the materials will be low
- Senior management will need to engage with DRM as a risk management exercise
- Senior management need to understand that implementing a DRM system is as much about negotiation as it is about the law and technology
- All parties should use this exercise as an opportunity to reappraise their e-learning activities

- E-learning materials only become useful when combined with human teachers and institutional infrastructures – the systems approach
- There is little likelihood of any 'technical fix' to DRM in education – 'use the difficulty' by taking the opportunity to shift current e-learning practice to a more embedded and sustainable model. This will help to offset costs
- DRM cannot be implemented successfully without top-down senior management involvement (this applies equally to e-learning)
- The best institutional base for DRM in learning materials is the library (not the commercialisation/research office)

To work, a DRM system has to fit into the proposed social context of use. This 'systems' approach has become a clear theme throughout the project and has a strong bearing on our policy recommendations. It also carries two important sub-themes:

1. " Some basic arguments need to be made about the value of learning objects and the potential values of sharing, as well as the services that a repository can offer. A learning object repository should be recognised as a support mechanism for quality teaching rather than the means – it needs to be part of holistic teaching & learning strategy."

Proven et al 2006
Existing Sources of Legal Guidance and Gap Analysis
TrustDR WP1-1

2. "The technology, specifications and standards and methods relating to this area are still in their early stages of development and originate in very different organisational and work contexts to those of mainstream public education. We should be cautious about accepting all the claims being made for these technologies and where possible adopt a simple approach that is more likely to be sustainable. This is especially applicable to the field of metadata, repositories and DRM (Digital Rights Management)."

Dripps et al, 2006
Doing the Right Thing: sources of guidance for good practice with metadata and repositories
TrustDR WP2-1

Until very recently the organisational and cultural factors affecting e-learning have largely been ignored in research, but there is increasingly strong evidence about the critical importance of these factors (Pollock and Cornford, 2000), (Fernandez-Young et al, 2006). Legal issues act as a very effective 'lightening conductor' that brings difficult questions about ownership, power and control to the surface. In our work we argue that these largely unresolved questions are also central to improving e-learning practice in our institutions. Our position is that in order to have effective DRM and improve e-learning practice there is a need for top-down institutional management involvement and direction, with appropriate national support. Our project will be producing institutional 'development packs' with tools and support materials for people at all levels in the organisation but it is important to note that these activities need resources and senior management involvement for success.

The aim and purpose of these packs is nicely summarised by this key point from a recent HEFCE publication on IPR in e-learning:

"Every HEI needs to establish a clear, preferably plain English, IPR policy and disseminate it widely across the organisation, including IT guidelines and codes of practice for staff and students."

Intellectual Property Rights in E-learning Programmes: good practice for senior managers, HEFCE, 2006

The TrustDR development packs will aim to empower people to undertake this task and help them put in place the necessary supporting measures in their institutions.

The approach we are taking to this problem is in line with that advocated in a recent roadmap for digital repositories published by UKOLN and Eduserv:

"…while the current technical infrastructure in the UK is in need of some development, it is primarily in the areas of policy (both national and institutional), culture and working practices that changes need to be made."

Digital Repositories Roadmap: looking forward, Heery & Powell, 2006

2 Introduction

At a JISC joint programme meeting in September 2004 at Brighton Cliff Lynch the Director of the Coalition for Networked Information[1] (CNI) talked persuasively about the 'data deluge' that was hitting educational institutions.[2] The ever growing amount and diversity of digital information presents many challenges to institutions and individuals about how to manage digital materials, understand what is important and what needs to be kept and managed and preserved. The previously separate activities of teaching, publishing, archiving and libraries are coming to occupy the same digital spaces. In the age of the internet individuals and institutions have become de-facto digital publishers – enjoying the legal rights and the responsibilities this brings. The need to make sense of this situation is growing particularly with respect to the legal considerations. As we have argued in previous workpackages we need to understand the 'business of e-learning' and have an opinion about how that business should be conducted in order to be in a position to make useful suggestions. Although frequently seen as a tiresome burden, a consideration of legal issues can also help clarify the situation if we regard the law and its application to this area as a way of helping us to figure out what is important. The legal aspects affecting teaching and learning materials should be viewed as enablers (Waelde, 2006) that can help us integrate e-learning into our institutions in a more effective and sustainable way than is currently the case. Considerations of legal accountability do present some difficulty to parts of the public sector education system that have traditionally been shielded

[1] http://www.cni.org/

[2] More information about Cliff's talks can be found here http://www.cni.org/staff/clifford_talks.html

from them in the non-digital era. However we think a good guiding philosophy to adopt here is to "use the difficulty to our advantage"[3], in our context this means opening up the processes surrounding e-learning in our institutions in order to make them more educationally effective than they currently are. Currently much of e-learning consists of projecting traditional work patterns onto technologies such as VLEs and learning objects, this approach is ineffective. To be used to their full advantage these technologies require a different organisation of the educational process. This aspect of learning technology, the 'political economy of e-learning', has been largely ignored to date in the UK. As we have pointed out in earlier workpackages legal issues in e-learning tend to act as a lightening conductor for the difficult and often contentious issues concerning power, ownership control and status, and for those that want to resolve these issues this can be a useful tool for change management. We shall consider some of the ways legal policy decisions can be used in this respect later in this document.

Most of this document applies to the management of learning materials in general but here we are particularly interested in IMS Content Packages using LOM (Learning Object Metadata) and stored in Institutional Repositories where the institution formally takes responsibility for the content.

This document represents a kind of distillation of the experience of the first half of the project. Here we produce our ideas and suggestions about the possible policy directions that institutions will want to consider. The metaphor of a sea journey that we are using is an apt one, for us the 'problem space' represented by IPR in learning objects and repositories is a wide and deep one and relatively uncharted. To cross it we have had to explore it at the same time – it is a multidimensional space including the separate but interrelated dimensions of educational practice and theory, the law, technology, professional and institutional cultures as well as strong political and commercial interests. Our journey has not been a simple straight line - we have had to adapt and improvise to get to this point and we suspect the same will be true for institutions and individuals making the same journey. One of our ambitions is to provide a map for others to plot their own course. Along the way we have had to tackle the illusions and delusions surrounding e-learning and the relative immaturity of much of the technology involved, in many respects the law has not been the main problem.

Many people feel, understandably, that tackling the legal aspects of digital learning materials must be a dull and dry undertaking. Well, it probably would be if we approached it in a narrow legal and technical sense but this would have little relevance or use to anybody. From the start we have approached the problem on a broad front stressing the 'systems' nature of the problem. As a result we have found the work and subject area much more interesting and dynamic than we might have thought at the outset. In all our project documents we have sought to unravel the confusion and complexity surrounding the problem and we have taken a position that is not neutral. We believe that addressing the legal matters surrounding learning objects can play a role in transforming the current practice of e-learning from its

[3] A phrase commonly attributed to the British actor Michael Caine

current immature and peripheral state to one where the potential of both the technology and progressive educational methods can attain their full potential.

Note: to get the most out of this document you should also read the project scoping exercise document (SP-2) and the report on the educational application of learning objects entitled "Understanding the Business of E-Learning" (WP1-2). For a full list of all the project documents, workpackages, papers and final outputs please refer to the project website at:
http://trustdr.ulster.ac.uk

2.1 Position Statement on E-learning

To be clear, we do think the application of technology to education has great potential but for that potential to be realised it needs to be linked to a change in the way our institutions work and are structured and the way people work within them. We have explored these themes in some depth elsewhere in the project documents particularly in *Understanding the Business of E-Learning* in WP1-2 and the paper *Prospects for Using Learning Objects and Learning Design as Staff Development Tools in Higher Education*. In these works we have linked our analysis to the theories of teaching developed by Paul Ramsden (1991) and Diana Laurillard (2002).

This document applies to most aspects of e-learning but here we are particularly interested in the creation, sharing, use and reuse of learning materials in mainstream further and higher education utilising tools such as VLEs/LMSs, ePortfolios, web sites, blogs, wikis and email etc. The adoption of e-learning technologies is often linked to other changes in educational provision such as blended learning and flexible learning. This all presents challenges for the institutions and those who work in them. The demands for greater efficiency and flexibility often drive the adoption of e-learning technology – but is not usually well articulated.

In a guide to implementing flexible learning in FE and HE commissioned by the Quality Assurance Agency[4] (QAA) for higher education in the UK (Casey & Wilson, 2006) the authors discus the kind of structural and professional changes that are required to support these new practices and stress that e-learning technology should be seen as a set of 'services' to support this activity. The authors of the QAA guide go on to stress that the mere purchase and installation of technology does not actually cause change on its own and observe that a concentration on technical issues is often a kind of institutional displacement activity to replace the harder issues that must be dealt with. We agree with this perspective and observe that the much-vaunted hopes for e-learning and learning objects have yet to realise their full potential because of these institutional and professional reasons. Learning objects and institutional repositories have arrived on the scene and will help us to do something educators have always done, create and share, the main obstacles to their use are neither technical nor legal but cultural. A proper consideration of IPR policy to support these technologies

[4] http://www.qaa.ac.uk/

needs to factor in these obstacles as well. In this way the work of the project aims to play its part in embedding e-learning in our institutions.

3 Preparations: understanding the business of e-learning

Here we discuss perhaps the most important issue in relation to DRM in e-learning materials, what is e-learning about and what is the role, importance and value of our learning materials. Answers to these questions are essential to formulating DRM policy. As Robson et al (2004) state

"DRM is a broad and deep topic. Each aspect of it, including technology, legal aspects, standardisation and policy making must be studied on its own"

But not, we would argue, in isolation, we have presented our analysis and position on the educational applications of learning objects in *Understanding the Business of E-Learning* in WP 1-2. As DRM policy and technology decisions will have long-term consequences that are likely to be difficult to unravel we think it is important to make matters as clear as possible. This is especially important considering some of the hype surrounding e-learning fuelled by strong commercial and political agendas. Fundamentally, our concern comes down to:

a) understanding how education works and
b) understanding the role and value of content in teaching and learning.

This is what we mean by the phrase 'understanding the business of e-learning'. In *Understanding the Business of E-Learning* in WP1-2 we have argued that the really valuable and important thing is educational expertise, which can exist at an individual and institutional level. We also introduced the concept of viewing educational provision and institutions as a 'system' with learning materials being only one part of the overall system. In addition we made the point that the value and usefulness of content is manifested in the way that it is used – i.e. in the teaching. Both the teaching theories of Ramsden and Laurillard, referred to earlier, stress the centrality of the student-teacher dialogue.

Coming to terms with the real value and use of learning materials in education is important before we start to make important and potentially expensive decisions about how we manage that content – and should help to inform those decisions.

People do not learn well just from learning materials in an isolated manner, nor have they any great desire to as was shown by the collapse of the first UK 'virtual university' (the UK e-U) with £100 million of debt in 2004. This was criticized as a "shameful waste" of public money" by the chair of the Science and Technology Select Committee, Dr Ian Gibson. For more see: http://education.guardian.co.uk/elearning/story/0,10577,1190470,00.html).
This venture collapsed for a number of reasons, not least was a lack of students and an underestimation of the effort required in designing distance learning materials and

teaching at a distance by traditional institutions. There is a limited market for education at a distance and arguably that market is already dominated by existing players. There is even less demand to study wholly at a distance without any face-to-face mediation as the UK e-U attempted to do. A very useful article (Fernandez-Young et al, 2006) reflecting on the experience of developing and delivering courses for the Uke-U published by a HEA subject centre observes:

"Most attempts in conventional universities to develop revenue streams from online learning have been unsuccessful. Online learning is now used either in 'blended' courses where it is mixed with face-to-face learning or as a support for domestic higher education, notably in Australia and China."

The specialist open and distance learning providers certainly do put a great deal of emphasis and value on their learning materials which are designed to carry part of the pedagogic load. The courses they support are also intensively designed. But most mainstream educational institutions do not have the design and pedagogic skills base to engage in this market. Fernandez-Young et al (2006) described their experience of making learning objects for the Uke-U as a very difficult exercise which they were only partly successful in, the notion of de-contextualisation and granularity being a wholly alien concept to them, ultimately they state that they were not convinced of the merits of the approach either. This is not surprising as we have argued in *Understanding the Business of E-Learning* in WP 1-2 and in the paper *Prospects for Using Learning Objects and Learning Design as Staff Development Tools in Higher Education* the existing academic workforce simply do not have these types of instructional design skills. To clarify; academics don't need or acquire these skills because they teach in a face-to-face mode; their teaching is literally 'embedded' in the bricks and mortar of the institution (Koper, 2003); they are the overworked 'general practitioners' of teaching – combining a host of other duties and responsibilities. In contrast the profession of instructional design for distance learning is relatively narrow, but deeper, and to continue the medical analogy they are more like consultant specialists. It is difficult for most academics to abstract their practice in the way that is needed to produce online/distance learning courses and materials. It is useful to get the perspective of the 'specialists'; this is how Peter Sloep (2004) of the Open University of the Netherlands Educational Expertise Centre sees it:

"Developers of learning objects will certainly have a hard time unlearning their 'bad habits'. The fact that CETIS, the UK Centre for Educational Technology Interoperability Standardisation, went to great lengths to issue guidelines on how to develop decontextualised learning objects illustrates that we are dealing with a significant social hurdle here" (Casey and MacAlpine, 2002).

This is also increasingly being recognised in discussions about implementing the IMS Learning Design specification that makes possible the writing of detailed pedagogic scenarios that can record and organise the interactions between students, teachers, learning resources and communication services (Griffith, 2005a). The Learning Design specification has some exciting possibilities and to their credit the developer community associated with this are increasingly taking this into account. Fernandez-Young et al (2006) argue that these contextual factors surrounding online learning need a much better understanding:

"Much research into online learning examines pedagogic issues and the student experience. Few studies analyse in detail the organisational aspects of delivering online courses"

We also think that organisational aspects of e-learning are the key and in *Understanding the Business of E-Learning* in WP 1-2 we argued that the key to improving quality and efficiency is not so much about the use of technology or educational materials but in changing the structures of the educational institutions and the way people work within them. As a guide commissioned by the QAA (Casey and Wilson, 2006) concluded:

> "The response of our educational institutions so far to larger, more diverse numbers of students and fewer resources has been 'more of the same', larger lectures, longer teaching days, put notes on the web, create ever more 'content' – but not share and use it, use virtual learning environments to mimic classrooms, continue to teach as individuals, use expensive academics to teach at a low level, and so on."

The traditional individualist model of teaching tends to dominate, this acts as a brake on the effective and efficient use of the technology as we have argued in *Understanding the Business of E-Learning* in WP1-2, this is also the key to understanding how academics and institutions are currently managing their teaching resources. As the literature review (Pickton, 2006) for the JISC Rights and Rewards project[5] remarks about academic attitudes to sharing:

"the literature is conspicuously quiet on the subject".

The importance of taking these attitudes into account and the related difficulties affecting reuse of learning materials is also recognised in the JISC CD-LOR[6] project (Community Dimensions of Learning Object Repositories) *Report on Learning Communities and Repositories* (Margaryan et al, 2006).

The problems facing education are not all recent or financial, as Ramsden points out:

"Let us be clear about one fact: the quality of undergraduate education needs to improve, and it has needed to improve for a long time….although there is much that is and has been excellent in higher education teaching, there is a great deal that has frankly always been bad."

There is a growing realisation that it is not very sensible to invest in learning technology and not change the way we work. It is a bit like a factory installing a new production line and continuing to use handcraft production techniques – yet this is the situation that many of our institutions and teachers find themselves in. This is not

[5] http://rightsandrewards.lboro.ac.uk/

[6] http://www.ic-learning.dundee.ac.uk/projects/CD-LOR/

surprising; tradition, dominant groups and vested interests can delay and obstruct the adoption and dissemination of new knowledge as the history of science shows (Kuhn, 1996).

One example of this is the continued conflation of research activity with teaching at undergraduate level. Laurillard (2002) is clear this is a an unnecessary diversion:

"It is the proper model of post-graduate education, but that is where it must be confined. At undergraduate level, students are exploring an already known field of knowledge; they are explicitly not breaking new ground, except at a personal level."

The launch of the Institute of Learning and Teaching in Higher Education and its later relaunch as the Higher Education Academy to promote the profession and importance of teaching is having an effect. Scholarship relating to teaching and learning is being taken more seriously, as the article by Fernandez-Young et al (2006) shows, and the benefits will pass through in time. But teaching is still seen as a secondary activity to research despite the fact that the vast majority of institutional revenue is derived from teaching. Matters are now improving but this criticism by Laurillard (2002) still largely holds true:

"Academics are going on courses on management training and marketing methods. Reform of an education system might be better served if they went on courses on how to teach better."

The education sector is changing in response to internal and external pressure; the change is uneven and depends on local conditions – hardly surprising given the large degree of autonomy granted to these institutions and individuals. We have argued in *Understanding the Business of E-Learning* in WP 1-2 that to make the best use of technologies the educational workplace has to change to take advantage of them. This is a major challenge and entails institutions and individuals undergoing change together, as Laurillard (2002) puts it:

"We need to rebuild the infrastructure that will find the fit between the academic values we wish to preserve and the new conditions of educating larger numbers."

The first part of this process would be to understand how our institutions currently work and how they might change. In the project research paper *Modelling Organisational Frameworks for Integrated E-learning* we provide a general-purpose model for doing this and in the report *Understanding the Business of E-Learning* in WP 1-2 we look at the pedagogic and professional cultures involved.

So, how would we characterise existing practise? Typically, a student on a course will pass through the hands of different lecturers all teaching from their own notes, not working as a team from the same 'script' or indeed using the same learning materials. This has the effect of fragmenting the learning experience and subject matter, it also places a higher load on the student than is necessary and presents obvious barriers to 'non-traditional' students. In this pedagogic world-view it is possible to see why some teachers like to stick with creating and transmitting their own content. It is partly because they created their own content as part of the process of their own learning and

relearning of their subject in order to teach it to their students. Thus their teaching strategy is often to get their students to learn from what they did – this is not a very sound approach, but it is common and intuitive and helps account for lecturers deep attachment to their own 'stuff'.

This deeply personal relationship between lecturers and their own 'stuff' often manifests itself in UK e-learning projects where money is spent on content creation not on changing practice, while the content that is created is not often shared beyond a small circle[7]. We would argue that this tendency is a sign of a lack of teacher training, pedagogic confidence and institutional coherence.

In the research paper entitled *Prospects for Using Learning Objects and Learning Design as Staff Development Tools in Higher Education* we have described these cultural barriers to sharing and reuse together with some recommendations for change. These kinds of factors have also been taken into account in the USA by the work of the NCAT[8] (National Centre for Academic Transformation). The NCAT in association with charitable foundations such the Pew Charitable Trust has been offering large amounts of money to US institutions to redesign their courses to overcome these factors, with marked improvement being shown (Twigg 2002, 2005). One of the features of their grants is that no money is available for new content creation – emphasis is instead on curriculum design and work reorganisation. Along these lines we would suggest that the real benefit in sharing materials is not so much the materials themselves (although they are clearly important) but the fact that they are being shared. Sharing materials means some of the prerequisites for improvement have been reached – with academics being more concerned with teaching than the logistics of delivering content. In *Understanding the Business of E-Learning* in WP1-2 we cited examples of the powerful effects of the use of learning objects when combined with reorganisation of the teaching workplace, including the work of Trayner (2002), Boyle (2003) and Bradley & Boyle (2004), and the NCAT (Twigg 2002, 2005).

So, to summarise this section:

- Yes, learning materials are important - but not that important - it is the use they are put to which dictates their value and this is derived from the human agency involved in the form of a teacher, course designer, tutor and assessor, and of course learner etc.
- Reorganising the educational workplace in order to get the benefit of sharing materials is more beneficial than the materials themselves
- Materials are just one part of an educational 'system'
- Materials out of context will often have little value
- Producing more materials will not make people work differently
- Sharing materials and working differently will produce improvements

[7] Evidenced in our small scale study in SP3 and the surveys by the JISC Rights and Rewards project referenced in this paper

[8] http://www.thencat.org

- The cash value of e-learning materials often bears no relation to their use value – even expensive materials 'fade' rapidly
- There are already large amounts of learning materials available
- Most e-learning materials will have little cash value (the eBay test)

Perhaps the most important point we can make that helps make sense of e-learning and is in tune with the theories of teaching espoused by Laurillard and Ramsden is that the 'value' lies in the processes of teaching and learning that the educational system makes possible. Learning materials play a small part of this. The *process* is what is valuable not the 'things'. It is worth quoting this extract from the preface to the 2002 edition of *Rethinking University Teaching* by Diana Laurillard (2002):

"As before this edition finishes with a blueprint for a university infrastructure that is not sidetracked by the uncertain notion of an 'e-university', or an 'online university'. The integrity of academic institutions is paramount. Throughout the book there remains the fundamental assumption that a university is define by the quality of its academic conversations, not by the technology that serves them".

In many ways we already have more than enough technology available to transform our educational institutions[9], the real issue is what we do with what we have got. A guide to implementing networked learning in higher education published by JISC (Goodyear et al, 2001) makes a similar point by observing that it is possible to perform educationally valuable activity with quite limited technical means. It is remarkable, in our opinion, that during the e-learning 'bubble' of recent years that so little has been learned by mainstream educational institutions from the experiences of the distance and open learning communities.

4 Mapping the Data Seas of Education

4.1 The Way We Work Now

Even in a VLE (Virtual Learning Environment) the course space tends to be a 'private space' where the academic does their 'own thing' with their materials – those that they create and those that they use from 3rd parties[10]. To describe an average VLE as an institutional repository would be an exaggeration - if we think this equates to sharing between academics – it would be better described as an institutional facility that individuals use to store and deliver materials. And of course those individuals are also using a very wide range of other technologies to support their work in teaching.

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[9] David Wiley made this point persuasively in a keynote speech at the IEEE International Advanced Learning Technology Conference in Holland in 2006.

[10] Although demands of rights-holders can reinforce this 'private space' - the current CLA scanning licence requires restriction on access on a course by course basis.

The JISC Rights and Rewards project has done some useful work in charting these rather informal resource management strategies and the results of its academic survey confirm the wide range of storage and delivery options academics are using in their teaching activities (Bates et al, 2006a). The same report gives a useful discussion of the ways in which academics are prepared to share materials and introduces the useful concept of multiple 'boundaries or 'layers' to represent the degree of their trust and willingness to share their materials. This bears a close correlation to the findings of John Bell in Australia (Bell, 2005). Please See Fig 5 below in this report.

Another report from the Rights and Rewards project examines different aspects of the digital lifecycle of teaching materials (Bates et al, 2006b). From an analysis of the file types in use the project concluded that the great majority of materials were word documents, powerpoint presentations, web pages and images, with multimedia files being much less frequent. This mirrors impressions from our own work experiences that much of the teaching materials in use are simple and of fairly low cash value but have a higher utility value. Document formats such as Word and PowerPoint are also easy for most academics to edit and alter – outside these file formats the technical abilities of academics declines markedly.

The Rights and Rewards project literature review (Pickton, 2005) makes the important point that academics engage in scholarly exchange with a wide range of individuals and organisations in the course of their work and produce an equally wide range of materials, from those that are formally published to so-called 'grey-literature' (working papers, applications, technical reports, surveys etc). It is quite common for individuals and groups of academics to be involved in widely dispersed sets of collaborative arrangements and exchanges, sometimes without ever meeting face-to-face.

In this respect the IPR situation regarding sharing learning objects between institutions has some surprising similarities to e-science and grid computing where data is shared across institutional boundaries and adapted or used to produce new materials. This was brought home to us at the JISC Security and Access Management event in Bristol on the 27/02/06. The e-Science and Grid communities are increasingly requiring complex solutions to managing access (high security, the need for an audit trail or addressing the absence of an audit trail and even the requirement for no audit trail to be kept to ensure anonymity, cross-institutional or international work, role-based activity etc.). There are currently a variety of ad hoc 'local' systems in use in addition to Athens, and a common way forward needs to be found to allow a fully embedded national infrastructure, as is the case in e-learning. Common issues include; levels of authentication, granularity of access; delegation and associated roles; attributes (core and extended); weak versus strong security for different resources; personal versus institutional identities etc. Specific shared problems relate to directory services (poor information management, not institutionally centralised) and engaging with publishers to make them "Shib-enabled". These are all issues, which equally affect learning material – particularly the institutional management of records and information that will be required for Shibboleth to work (in our view a major challenge). It will be useful to cross-reference future work in both areas.

4.2 A Technical Fix?

Collier et al (2004) provide the useful term 'ecosystem' to describe the interconnected nature of the problem area and provide a useful discussion about "Implementing DRM in an Ecosystem" which has a direct parallel to our approach. In section 4.1 of their paper they describe the process of understanding the particular environment under examination in order to develop a DRM solution. Although these authors are particularly interested in automated systems they make comments and analysis that are very useful to us - their comments about the feasibility of automation in relation to complexity are particularly relevant. We reproduce the section below:

> " **The Rights Management Environment**
>
> A DRM ecosystem for education operates within a particular set of environmental conditions, composed of the law, policy, practice, market mechanisms, organizations, people with roles, and expectations of the education community. Recognizing and understanding these is the first step in a successful DRM implementation.
>
> **Actors (People and Organizations)**
> DRM, often equated with content protection, has a reputation as serving the publishers and vendors of content. In fact, it can and should serve a more diverse audience and it is of paramount importance to identify the real customer(s) in any DRM implementation. This can be complex and can lead to conflicting goals and measures of success, but it is necessary to acknowledge and face this complexity.
>
> **Law**
> Copyright law grants creators of an original work certain rights to their creations. These laws, which vary from country to country, establish the legal requirements and boundaries within which the education community must operate. Laws can both support and inhibit the management of intellectual property, but they cannot be ignored.
>
> **Market and Intellectual Property Management Models**
> Before a community can implement a rights management ecosystem, it must identify and agree upon the underlying market and intellectual property management models that will be in play. Market models might include retail and wholesale models, public funding models, free distributions models, and federations and cartels. Property management models might include centralized and decentralized control and client / server, distributed networks, and peer-to-peer networks. Each model and management approach has commensurate rights management and tracking requirements.
>
> **Rights and Conditions**
> Before selecting technology and services, a community must consider which specific rights, permissions and conditions will be supported by an

automated ecosystem. Examples of specific rights are the right to: copy; print; modify; distribute; and use for commercial purposes.
The community must also agree on the conditions that can be imposed and enforced by the ecosystem in order to access these rights. Conditions can include things such as: payment required; limitations on the number of times a work can be copied, read, printed or redistributed; limitations on the time frame during which the rights can be exercised; and specifying the attribution required if the work is quoted or re-used in any way.

Choosing the Right Problems to Solve
DRM will be of the most value in an environment where there are simple, small and frequent transactions involving the use or exchange of intellectual property. If the transactions are infrequent then automation is not cost effective. If the transactions are overly complex, then automation may not be feasible. If the transactions are more suitably handled via traditional negotiations and contracts, then automation is not called for. Not all types of rights transactions are appropriate for automation.
As pointed out in the scenarios in the previous section, technology-based DRM is needed but the technology is in a nascent state. An approach based on identifying one or two key problems and trying to solve them with the best technology available is more likely to succeed than either doing nothing while waiting for the technology to mature or implementing everything in an attempt to solve all problems at once."

A Digital Rights Management Ecosystem Model for the Education Community. Collier & Piccariello & Robson (2004).

The last paragraph from Collier et al is particularly appropriate to our situation with learning objects in education. This area has the potential for great complexity which may make automatic DRM measures difficult. Two examples serve to illustrate this:

a) complex 'nested' learning objects that contain other objects and/or lots of resource files;
b) learning objects that have been created from other objects (aggregated in the jargon) – possibly many and possibly complex.

In a) How far do we go to enter metadata about the individual component objects in our nested structure? How far do we go in entering metadata about individual resources within the objects such as images and text files etc? Given the fact that many VLE/LMS currently detach metadata from the object files when uploaded this compounds the problems, as well as creating their own 'versions' of learning objects which may not interoperate. The education sector track record on devoting enough resources to metadata creation and maintenance continues to be very poor.

In b) How do we appropriately record metadata about the origins of all the component parts of the new aggregated object? The likelihood of this being

carried out is extremely low if left to academics. There is some scope for automation - but without skilled human intervention this will fail.

It is for these very practical reasons that open and distance learning providers get the contributors to learning materials to sign away their rights to attribution as well as ownership. In this way the materials can then be freely repurposed by the institution without having to go through an impossible task of record keeping and permission negotiations. 'Consolidating' all the rights and ownership in this way by an institution makes the whole process manageable, the learning materials then enter the educational 'DNA' of that institution. This may well be an attractive long-term approach for mainstream education, if it is combined with a 'social contract' with the staff to maintain the original 'virgin' learning objects together with a record of attribution in a digital repository. This would be a very practical way of using the technology to address some of the very real cultural issues involved in sharing learning materials within and between institutions. We return to this topic later in this report.

In a discussion about DRM in a distributed environment Stephen Downes (2004) comes up with some useful suggestions, including the notion of a licence registry that people would engage with to create rights expressions for their objects from a 'menu' of options. Once done the user would then embed a 'pointer' (e.g. a URL) to the rights metadata in a registry. This has a lot of attraction and was also mentioned in the JISC DRM report (Intrallect, 2004), while this would work well at the top level of objects it still does not really help with the issues raised above about complexity and reuse. To work, what needs to be done is to provide a permanent unique identifier to the object and associate this to the rights expression in the system. This sounds fine in theory but the issue of choosing unique identifiers and managing them is far from being a stable area. Even if we chose one of the existing unique identifier schemes such as DOI[11] (Digital Object Identifier), how would we use it? The attractions of the DOI system are clear for education (Heery & Powell, 2006), and they are free from patent encumbrances – a significant factor in the current IPR law climate. Rather like a hallmark for jewellery a DOI identifier lets the user identify where the object has come from and who created it etc – this has an intuitive attraction. By being unique it also means we might use it to effectively to resolve a link to a metadata record held separately, including more detailed rights data. This is good as far as it goes, but has limitations when applied to learning objects. Would we assign a DOI to each object? To each file? How would we maintain this through various cycles of aggregation, disaggregation and incorporation of complex objects? How far down a directory tree, and to what individual files would we assign DOIs?

The obstacles we outline above about managing DRM (and permanent identifiers) in complex and reused learning objects, to our minds, have their roots in two fundamental problems:

i) we are trying to use a medium (learning objects) that originate philosophically in highly organised, regulated and sometimes disciplined

[11] http://www.doi.org/

workplaces (Friesen, 2004) like aviation, the military and distance learning providers. In these environments the content has to have a lot of design value embedded within it, as a valuable resource it is used and managed in a way that makes the best use of it. It is unlikely that these organisational models will transfer simply to education – yet the pose a need for a more organised approach to resource management for teaching than currently exists. Hopefully this will provide a source of creative tension.

ii) technical approaches to DRM are predicated on simple and frequent transactions (Collier et al, 2004) – this is the diametric opposite to the educational scenarios we have been discussing.

As we have already discussed in *Understanding the Business of E-Learning* in WP 1-2 and the research paper *Prospects for Using Learning Objects and Learning Design as Staff Development Tools in Higher Education* we simply cannot expect to adopt a learning technology, such as learning objects, from a radically different work environment and expect them to work; the workforce do not have the design and application skills, they are not distance learning designers or instructional designers; the institutions are not organisationally coherent enough to service the different business models that the technologies require – they are not primarily distance learning providers. Designing a DRM solution has to fit the particular business at hand, transferring a model from commerce, distance learning, aviation or the military to mainstream public education is not automatically going to work – the transactions are radically different and the costs of those transactions in terms of complexity and reuse are likely to be far too high to fit into any such model.

Before we move on from this discussion of a technical fix to DRM in education we should comment briefly on the Canadian experience of setting up a federated learning object repository called "eduSource". Announced in 2002 with a $4.25 million budget the eduSource project was intended to develop a national set of federated learning object repositories. By 2004 the project had ceased to function, like many of these initiatives they sound fine in theory but practice is another matter. A useful but brief discussion of the end of eduSource can be found on Stephen Downes blog at http://www.downes.ca/cgi-bin/page.cgi?post=15. One point he makes is that the push towards a closed system that could accommodate commercial interests was a feature of the project's failure. The inference here is that the need to implement technical DRM measures to suit commerce can make matters very complicated. As we have described above the transaction costs would be crippling, so far JORUM,[12] a national UK learning object repository, has avoided this path, and has adopted a licence and IPR regime of great simplicity, which in our opinion is to be commended.

The following sections use diagrams to illustrate characteristics of the e-learning problem space we are talking about in this report.

[12] http://www.jorum.ac.uk/

4.3 A View of the Data Ecosystem of E-learning

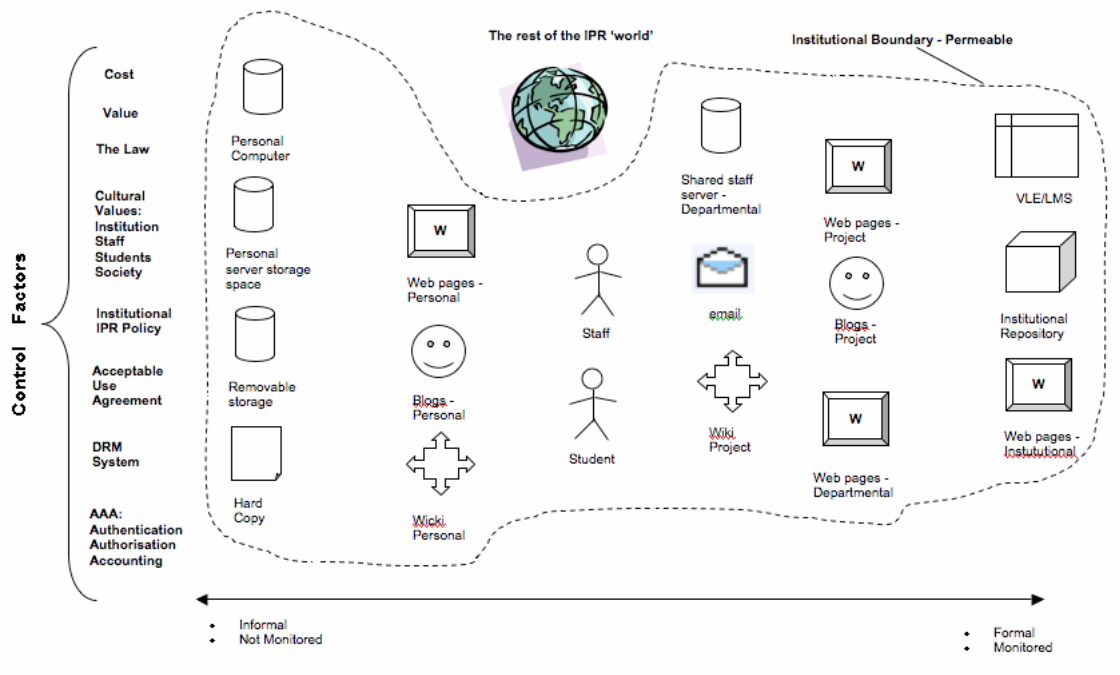


Fig. 1 Data storage solutions in e-learning showing the diversity of activity mapped against a continuum of control, within a notional institutional boundary, showing some possible control factors on the left-hand side.

4.4 Data Flows in the E-learning Ecosystem

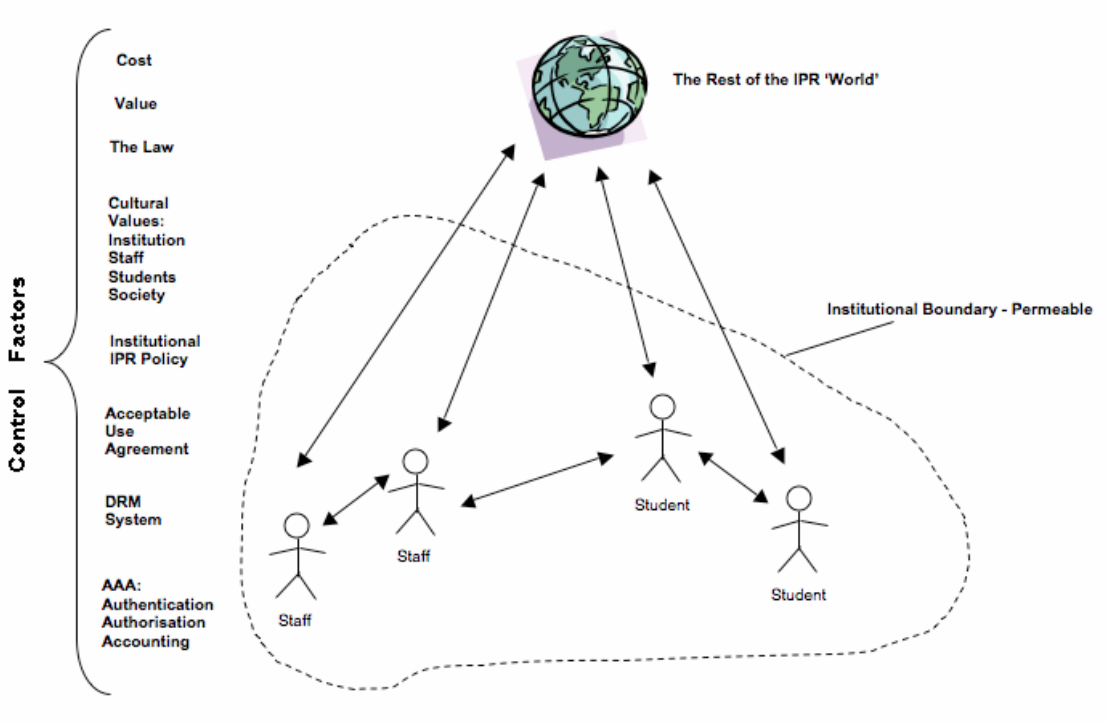


Fig. 2 Data flows between the actors in e-learning, within the notional boundaries of an institution, showing some possible control factors on the left-hand side.

4.5 Legal Dimensions of the Ecosystem

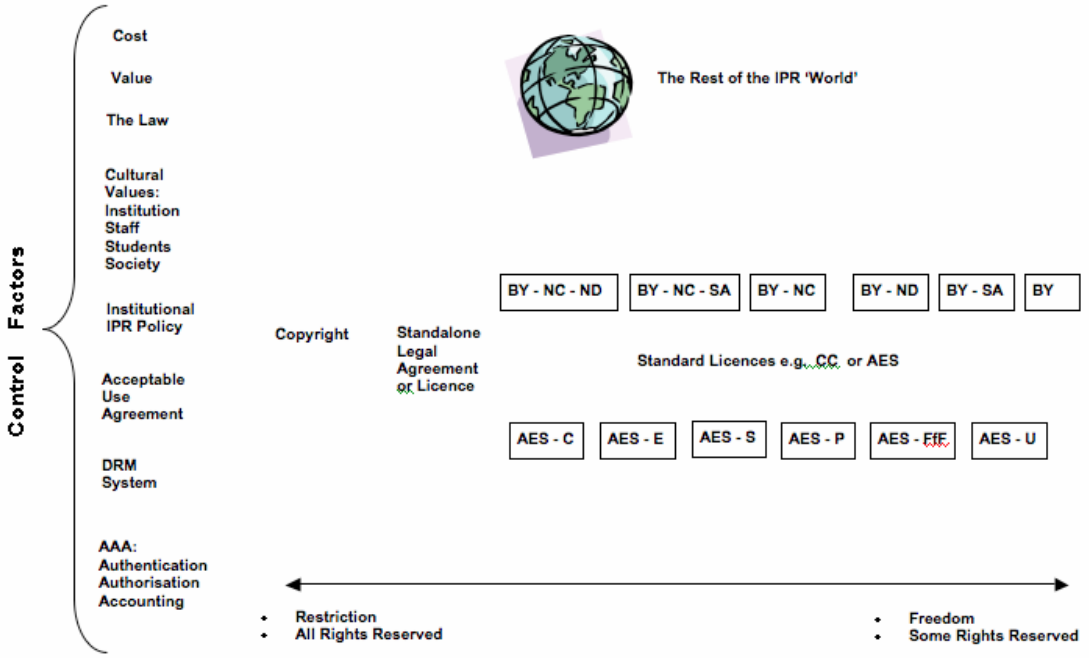


Fig. 3 The possible legal range of the access to and use of the content of a repository mapped against standard licence schemes such as those of the Creative Commons[13] (CC) or the AEShareNet[14] (AES). Possible control factors are shown on the left.

[13] http://creativecommons.org/

[14] http://www.aesharenet.com.au/

4.6 The 'Cosmic' Levels of Complexity of Repositories

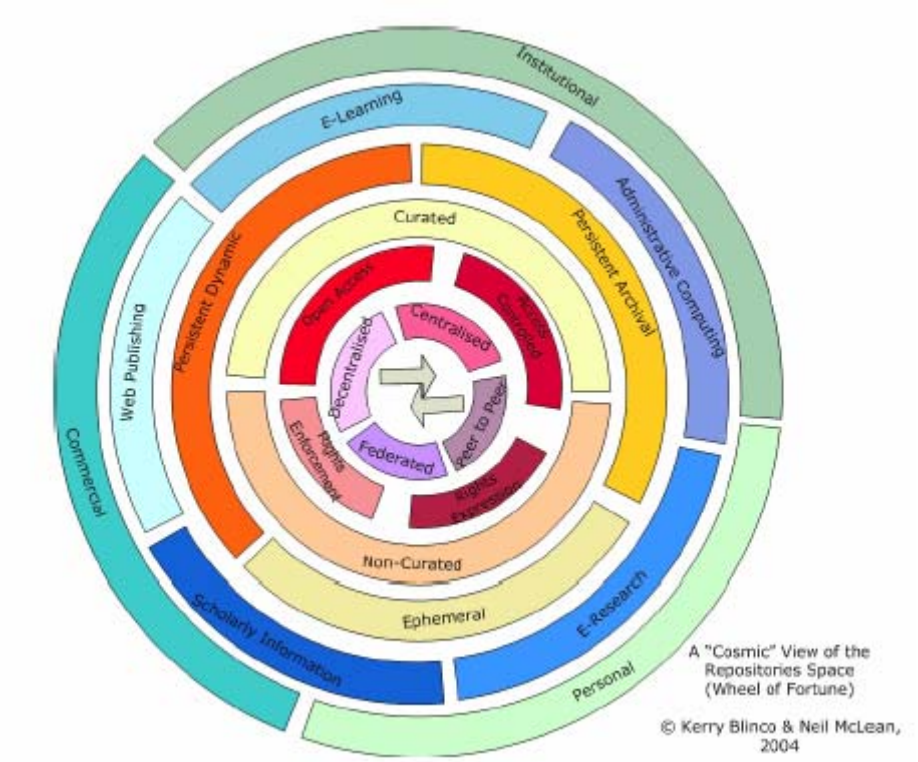


Fig. 4 A diagram extracted from a powerpoint presentation by Blinco and McClean (2004). To illustrate the 'cosmic' levels of complexity in repositories, imagine rotating the different concentric circles relative to each other to produce new alignments of relationships. This is particularly relevant to understanding the limitations of any automated DRM solution.

4.7 Boundaries of willingness to share

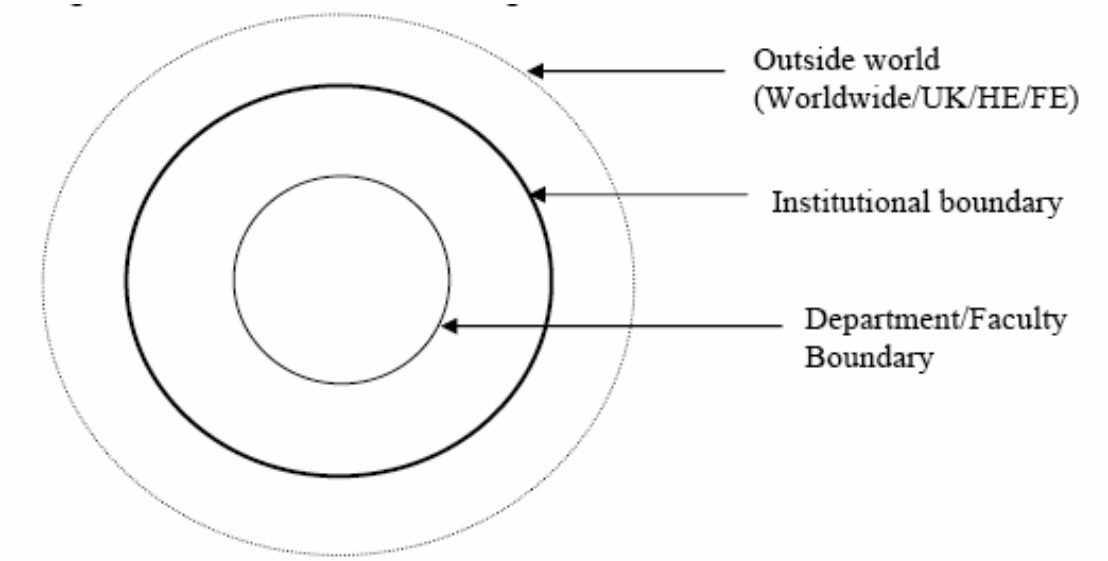


Fig. 5 The Boundaries for sharing resources – the thicker the line the stronger the boundary is.
Diagram from the Rights and Rewards Project Academic Survey: Final report (Bates et al 2006)

5 Navigating with the Law

Under the law copyright applies to any work as soon as it is created and 'fixed' in any physical medium, this includes the bits and bytes on your computer, in a VLE or a LMS, a Blog, a Wiki, an Institutional Repository etc. etc. So our starting base line is that all the items we have described in our 'sea of data' are subject to copyright and the law. To manage this situation, as in any other line of work, we need to be able to know what it is we are doing with this stuff and have some idea about what is important and valuable to us. We can theoretically apply the law to everything in the data sea if we want to, but in practice we won't. The law is there for us to use when we want to and when we have to – remember Copyright is a right that you can *choose* to assert to protect your rights. You don't always have to; few people would for instance want to protect the copyright in their shopping lists. There is a lot of sense in this quotation about copyright:

"the fact that our system of communication, teaching and entertainment does not grind to a standstill is in large part due to the fact that in most cases infringement of copyright has, historically, been ignored"

Mr Justice Laddie, 1996

But worries about copyright infringement are a real problem for education and commerce. In a discussion paper that the TrustDR project paper produced for the World Bank and the Asian Interactive Media Industry (Casey et al, 2006) we noted how the hostile legal climate created by commercial interests and their lobby groups is having a negative effect on creativity in the commercial and public sectors alike. In the e-learning arena of learning objects Griffith (2005b) has described the negative 'chilling effects' that copyright law is having on efforts at reuse in learning materials. While we agree that this is a problem we also think it a good philosophy to try and "use the difficulty" to our advantage.

In the learning materials domain this would equate to:

- Rather than passively accept the current IPR regime engage with it – find out more and try to change it
- Assert more control over your own materials – standard licences such as Creative Commons are a great way for empowering authors
- Attribute the work of others in your materials and keep records about the materials you use
- Use the opportunity to reassess what it is you are doing – understand the 'business of e-learning'
- Establish 'where the value is' in your activities – take the systems approach
- Use IPR issues as a lever to embed e-learning institutionally
- Understand that this is mostly about risk management – an important factor for senior managers to engage with
- Institutions and individuals need to learn more about this area (IPR) and accept their responsibilities to respect other people's copyright and authorship.

These are simple recommendations and if approached sensibly can make a big difference, they also tell us a lot about current practice.

5.1 A Compass to Guide Us: Introducing the TrustDR Framework

The TrustDR framework builds on previous JISC sponsored research (the RoMEO Project[15]) and JISC DRM Report (Intrallect, 2004) and has produced a conceptual model for managing IPR in e-learning – see the next section.

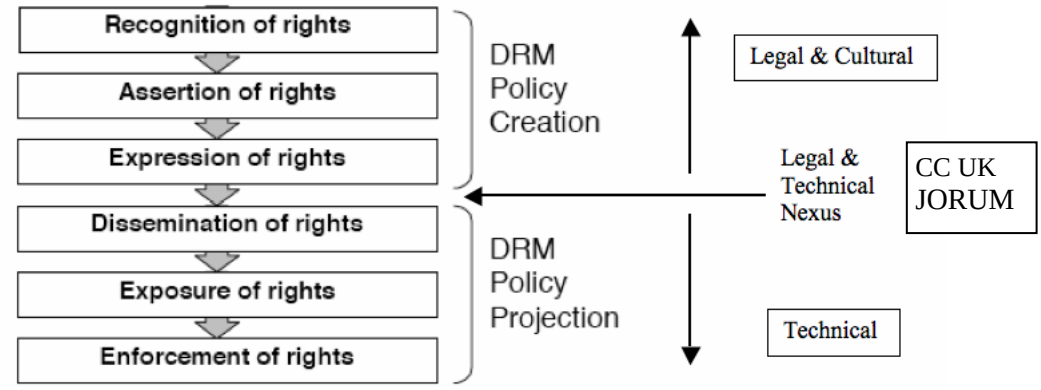


Fig. 6 The TrustDR framework for managing IPR in e-learning

5.1.1 Understanding the TrustDR Framework

The 6 layers on the left of the above diagram describe the components of a typical DRM system - these are briefly described below:

These first three stages all address the creation of a DRM policy.

- Recognition of rights is the stage at which staff, employers and suppliers (e.g. publishers) all need to be aware of who the rights holders are and what uses they might be licensed for
- Assertion of rights is provided by a legal framework in which people and organisations can assert their rights in a form that is defendable under law
- Expression of rights has traditionally involved only a copyright statement in a human-readable form. While this is still important it is also essential to take account of machine-to-machine (m2m) communication when considering digital rights management.

The final three stages concern the projection of a DRM policy.

[15] http://www.lboro.ac.uk/departments/ls/disresearch/romeo/

• Dissemination of rights ensures that wherever a resource is described its rights are also described
• Exposure of rights is the stage at which a user will see the rights information associated with a resource. This will often be when searching for resources
• Enforcement of rights includes both protective measures to ensure that rights are not infringed and steps to be taken when infringements are detected.

We can see that the first 3 layers (the creation of a DRM policy) are mostly concerned with the legal and socio-cultural (values, attitudes etc.) aspects of DRM. But as we move through the layers towards the centre and on to the final 3 layers (the projection of a DRM policy) we move more towards a concern with the technical factors involved in DRM. The arrows pointing toward the top and bottom of the diagram indicate this implementation continuum in DRM that encapsulates both the legal and socio-cultural aspects and also the technical issues.

Lying at the centre of the 6 layers is an area where the legal and socio-cultural aspects and the technical issues meet and have to communicate with each other for the DRM system to work. Because of this we have called this point the 'Legal and Technical Nexus', and it is at this point where the use of off-the-shelf licences such as those developed by the Creative Commons and possible derivatives of those used by JORUM would exist. Because these licences are both human and machine-readable they can perform this 'nexus' function.

Note: A useful analogy may be drawn between this diagram and the Open Systems Interconnection model (http://en.wikipedia.org/wiki/Open_Systems_Interconnection--Reference_Model), which is used to simplify the description of complex computer network and communications systems by breaking them into simpler logical chunks. In a similar way our 6-layer model is used as a way of simplifying the DRM process for all those involved – so those involved in each stage of the model do not have to know about the other stages. The addition of the other elements to the 6 layers completes our TrustDR framework.

5.2 Policy Considerations

Before diving into the nitty gritty of policy options and suggestions it would help to consider what the general characteristics of a good policy to manage IPR in learning materials might be. So, we have compiled a simple list.

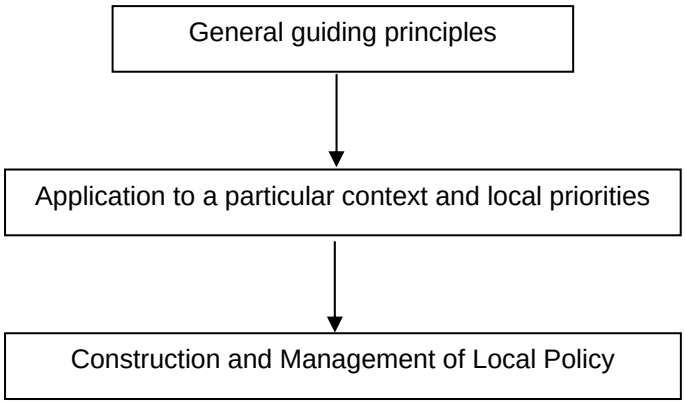
5.2.1 General Principles for an IPR Policy for Learning Materials

- Simple
- Effective
- Efficient
- Fit for purpose (to support educational activities – particularly e-learning)
- Be Legal
- Fair
- Reasonable

- Clear
- Professional & Institutional cultures – it has to take these into account and reflect them
- Have procedures for dealing with complaints
- Should not hinder the scholarly activities of academics or institutions
- Play a role in the positive development of e-learning
- Be part of institutional knowledge management
- Does not contradict existing policy
- Should support the Institutional Mission
- Be reviewed regularly (use SMART criteria)
- Be visible and promoted widely
- Be embedded in contracts (including employment)
- Be proactively managed and maintained (and be designed to be maintained)
- Be realistically resourced
- Take into account the type and uses and 'value' of materials
- Take into account the requirements of SENDA[16] and Copyright (VIP) Act[17] in providing access to materials
- As a rule follow the dictum 'take only what you need' when devising policy and agreements with staff, colleagues, collaborators and consortia. It's an investment in 'social capital'.
- Exceptions to the above rule might be; 'full-on' distance learning materials (relatively rare), contracts to supply from commercial organisations – where it may make good sense to arrange an assignment of copyright

5.2.2 Stages of Policy Development and Application

Policy development exists at 3 stages of increasing definition and local application:



[16] 'Reasonable steps' to avoid discrimination under Special Educational Needs and Disability Act 2001 http://www.opsi.gov.uk/acts/acts2001/20010010.htm

[17] Providing 'Accessible copies' under Copyright (Visually Impaired Persons) Act 2002 http://www.opsi.gov.uk/acts/acts2002/20020033.htm

Fig. 7 The Three Stages of Policy Development and Application

5.2.3 National Requirements

We would see the following national infrastructure and support being required:

- A policy registry (e.g. the work of SURF in the Netherlands) to make policy development and research easier
- A licence registry – where national (and possibly local) schemes are kept, maintained, preserved and are accessible including machine readable versions, and metadata application profiles that can be referenced to support metadata creation and maintenance (see project outputs for an exploration of this issue)
- An IPR in education scheme similar to the commercialisation schemes in universities research initiative – with government support arranged by the funding councils and with at least the same level of funding. The economic rationale for this is to help the transformation of the core business activity of most HE and FE institutions – teaching. Grants should be directed towards the institutional library (not the existing commercialisation offices – who operate in an inappropriate IPR regime and do not have the expertise) to cover one of each:
    - Librarian
    - Cataloguer
    - Administrator
- The above measure would go a long way towards moving current practice in e-learning from it's current project dominated mentality, ad hoc activity towards being institutionally integrated. Smaller institutions could (and should) share these staff and repository systems. If the 'knowledge economy' is real then this should be easy to sell politically. As with commercialisation, institutions, if left to their own devices, won't pursue this agenda. This whole area (including e-learning) is an issue requiring leadership at a national and local level. We can see this beginning to happen with funding councils and the government in relation to research and open access and the public interest. We need to see the same process in relation to the preservation, curation, sharing and reuse of learning materials within and between institutions – it does not all have to involve open access in this context.

6 Setting a Course

6.1 Initial Policy Considerations

This advice from Collier et all (2004) is a good place to start from:

"An approach based on identifying one or two key problems and trying to solve them with the best technology available is more likely to succeed than either doing nothing

while waiting for the technology to mature or implementing everything in an attempt to solve all problems at once."

To move forward we need to consider the following:

- immaturity of e-learning in general
- lack of uptake of the 'learning object economy' and reuse
- low value of much of the content
- poor levels of existing metadata creation and maintenance
- confusion about basic IPR law at all levels
- lack of IPR strategy and policy
- poor record of digital learning materials curation
- lack of basic record keeping and administration in learning materials
- variability of systems to relate metadata to objects, especially rights metadata
- cultural and organisational factors
- lack of established standards and procedures

Bearing this context in mind blunt terms we need to get the basics organised before contemplating tackling the rest of the TrustDR framework – this means recognising and agreeing who the rights holders are (no mean task in the UK education sector!) and most importantly keep a record of the materials and rights holders. To get to this position will probably require some negotiation between management and staff – to do this choose someone who is knowledgeable about the rights issues, is patient, diplomatic and a good communicator. Having this information is the absolute bedrock of any DRM system and is very lo-tech, but as we have suggested this kind of activity is almost non-existent and would signal quite a radical change from current work practices.

We think that aiming to fulfil the first 3 levels of the TrustDR framework up to and including the 'Legal and Technical Nexus', where the rights are expressed in legal, human and machine readable terms, is a realistic but challenging aim.

6.2 Using the TrustDR Organisational Framework to Support Policy Development

In the Scoping Exercise in SP-2 we developed a useful organisational model to represent e-learning activities based on recent research that was capable of supporting the development of a variety of analysis, planning and audit tools. The concept is simple but powerful and provides us with a way to break down the functions of our institutions into manageable 'chunks' and gives us a way of representing internal relationships. It also gives us a framework to support and express our aims for policy targets and to begin to articulate our ideas for possible implementation. Below we reproduce the graphical version of the model and below that a simple analysis grid that has been derived from it. We then use that in the next section to help represent the four institutional 'views' of DRM:

- Pedagogy
- Technology
- Organisation
- Strategy

When analysing, developing and implementing a local policy in detail it would then make sense to also make use of the three institutional levels represented in the model. The tools we have produced based on this model can be used to support different aspects of this process.

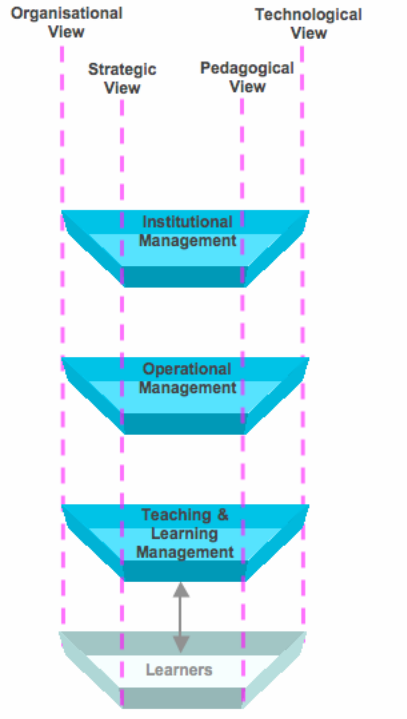


Fig. The TrustDR Organisational Framework for e-Learning

Level / View	Teaching & Learner Management	Operational & Curricular Management	Institutional Management
Pedagogical			
Technological			
Organisational			
Strategic			

Fig. Simple Analysis Grid Derived from the TrustDR Organisational Framework

6.3 Outline Policy Options and Targets for Institutions

6.3.1 Institutional Factors for Policy

Strategic

- Develop a clear policy for IPR in learning materials – state the obligations and rights of the parties. To be part of a standing item on IPR on the agenda of the governing body
- This should be accompanied by a clear 'plain-english' statement of principle that people can understand (HEFCE, 2006)
- As far as possible use standard policies (ideally from a policy register) and standard contracts and licences
- Management of IPR in learning materials to be coordinated by library service not the research or commercialisation office, this is likely to require recruitment and training and new roles.
- Use the TrustDR organisational model
- Use the TrustDR analysis, planning, implementation tools
- Use the TrustDR institutional development packs
- Employment – needs contracts and clauses covering IPR in teaching materials – examine and clarify
- Licences - Use a standard set of licences to cut costs and ensure consistency - Be careful before adapting any licence – get legal advice
- Consortia Agreements - Use and adapt off-the-shelf documents
- Contracts & Agreements with commercial organisations - Develop and use a restricted set of documents to cut costs and risks - Make this mandatory
- Plan for phased implementation – use a pilot to learn

- Provide for feedback and evaluation mechanisms – part of the annual review
- Provide resources (training, administration, technical etc)
- Link to the effective embedding of e-learning
- Maintain policy – identified person(s) and criteria and reporting mechanism

Technical

- Learning materials are stored in central institutional repository (may be partitioned for departments etc)
- Repository is interoperable to IMS specifications
- Materials are deposited in IMS Content Packages with IEEE metadata profile with an agreed minimum of metadata entered
- Rights Information is entered in the package metadata with a minimum of a URL pointing to a standard licence copied into the copyright field – makes things simpler and quicker for everyone
- Paper and electronic provenance information for the repository content is held and maintained in the library
- Repository can generate lists of materials authored by staff – for moral rights, to support staff progression and job applications. Option for the public to search all or parts of the repository metadata (as described in the TrustDR use cases and scenarios)
- Material can be accessed under 'fair use' exceptions and use of DRM does not discriminate against disabled users
- Means are made available to express the rights in materials electronically by 'copy and paste' statements, and templates etc

Pedagogical

- Online course materials and resources are quality checked by library every year for DRM and availability etc – with academic involvement
- Attribution required in all learning materials
- Online/flexible courses and modules etc designed to run without major materials alteration over 4 year cycle – i.e. one year longer than a degree course to get maximum efficiency gain but be manageable for traditional staff (7 years is the norm at the OU)
- Courses are designed and delivered by a team – design aim is to be teachable without the original authors
- Entire modules/courses from the institutional VLE/LMS are archived in repository (see below) (should include tracking data) for future reference and cross referenced to student performance; for organisational and pedagogic diagnostics (planning, performance, efficiency)

Organisational Factors

- Resources required are made available to implement strategy
- Appropriate indemnity insurance is in place
- Copies of all online courses are archived for at least 7 years (a usual period for keeping business records) this allows checks to be made of earlier courses for DRM – good for evidence of diligence. This also has some useful educational uses (see above) – acts as an institutional 'memory' for course designs. This would equate to collection management in the world of libraries
- IPR training is made available regularly to staff and students (at least once yearly) as with Race relations and DDA this training should be made mandatory
- Clear guidance on implementing the IPR policy is made available to all staff and students and is updated
- AUP (Acceptable Use Policies) includes statements on IPR policy obligations[18]
- All contracts of employment (including temps etc) carry clear reference to the IPR policy
- Administrative procedures to implement IPR policy are embedded – record keeping, course approval etc.

6.4 Outline Policy Options and Targets for Students, National Education Funding Councils, and Individuals

Students

- They own the copyright to their materials – forcing them to sign agreements is not legally enforceable, or desirable
- Ask them to sign a non-exclusive licence for permission to use their materials for educational purposes – must not be mandatory or linked to acceptance to study – probably best to say their stuff will be anonymised
- Student Union/Associations should engage with this area

National

- Financial assistance should be specifically targeted at this area through the grant bodies – as is currently the case with commercialisation – but directed to the institutional libraries to fund a librarian, cataloguer and administrator
- A national IPR policy register for the public sector is established

[18] Often extensions of JANET AUP http://www.ja.net/services/publications/policy/aup.html

- A national IPR licence registry for the public sector is established
- Where appropriate, standard licences and other contracts and agreements are developed for use by the education sector
- Training in the IPR of learning materials is included in teaching and professional qualifications
- Training in Instructional Design/Learning Design is included in teacher training programmes (should also include media and information literacy skills for teachers) – make use of several simple pedagogic 'components' and models that can be elaborated to more complex designs, (Koper, 2005), (Bennett et al, 2005), (Shuell, 1992), (Bartolucci et al, 2003)
- A policy of sharing and reusing learning resources should continue to be pursued nationally – this is a long-term process

Legal

- If people are dissatisfied with the increasingly negative and harsh current legal regime they should organise in order to change it through unions, professional associations or as citizens

7 Arrival: Policy Scenarios

In many ways legal and technical problems are not the most difficult ones we face when considering implementing digital systems (Institutional Repositories) to enable the sharing and exchange of scholarly resources for teaching and learning. This issue hits a raw nerve and acts as a lightening conductor for larger political and economical issues surrounding the changes that the public education system is going through as it is being asked to do more with less. The issue of ownership, control, power, status and working roles that the management of IPR (Intellectual Property Rights) in teaching materials brings to the surface is always going to be a contentious subject at the best of times. The year that this report was written has been marked by a bitter labour dispute in higher education in the UK, while forced redundancies have become an increasingly common occurrence in further education. An extreme example of the latter being the issuing of redundancy notices to the entire 730 academic staff of a Scottish FE college (Denholm, 2006). In such a context it would be naïve in the extreme to expect discussions about the ownership of IPR in learning materials to not be a sensitive matter. It is entirely understandable for academics to be reluctant to share teaching materials if they believe management will see this as a way of 'downsizing' the labour force. As we have discussed in earlier project workpackages (*Understanding the Business of E-Learning* in WP1-2) the role of learning materials in education is actually not that important from an educational point of view (Ramsden, 1991, Laurillard, 2002) the real value lies in the expertise of the teachers and the institutions to support learners. A concentration on the importance of learning materials is a symptom of an impoverished pedagogic philosophy (Casey and Wilson,

2006, Ramsden, 1991, Laurillard, 2002, Shuell, 1992), so perhaps the lecturers are right to be wary after all.

Implementing a DRM system in education needs to take the context into account and be handled with care, without this we run the risk of repeating the mistake summed up by the phrase "Geronimo's Cadillac" – that of introducing the wrong technology into the wrong place (see the project research paper entitled *Geronimo's Cadillac: Lessons for Learning Object Repositories* on the project web site).

Below we have created a series of short scenarios. Some are designed to show the implementation of aspects of DRM can also be purposefully linked to developments to support and embed e-learning. These scenarios also illustrate that a range of approaches are possible in order to fit the local conditions and still be in conformance with the law. Some scenarios are also included to represent current practice despite being unsatisfactory in some respects.

We also introduce a simple but useful conceptual model to describe some aspects of e-learning from the work of Casey and Wilson (commissioned by the QAA in 2006) that are particularly relevant to IPR management issues. The model suggests that the use of e-learning technology can be placed on a continuum describing the organisation of teaching and administration activities that stretches from 'traditional' individualist teaching patterns at one end, with a high degree of local autonomy, to a much more centralised and controlled one at the other end that might be exemplified by distance learning providers like the OU. We think most institutions are at the traditional end of the continuum in their e-learning activities and that a mid point represented by flexible learning provision will be a realistic target for them. These scenarios are generalisations to help illustrate the points we are making and are intended to provide a jumping off point for you to elaborate your own conceptual models – every situation will be somewhat different – but the need to conform with the law and improve teaching and current e-learning practice are constants. Scenarios 1 and 2 represent a 'menu of options' for policy creation.

7.1 Scenario 1: Encouraging People to Deposit Materials:

- The institution, in return for deposit, undertakes to keep a permanent version of the original object in the repository for preservation and attribution purposes. The understanding is that the reused objects gradually become incorporated into the institutional pedagogic 'DNA', but the originals are preserved for reference and, most importantly, for attribution. The importance of attribution is well established in research but far less so in teaching materials. There is nothing wrong in cultivating a sense of prestige to be linked to the deposit of materials. If this is linked to public attribution (which a repository is well fitted to service) then this can be a significant incentive to authors and creators. The motivational importance of reputation in professional life has long been recognised (Cicero, 44 BC)

- The metadata for the objects are accessible to the public – allowing the academic (and others) to generate a 'list of publications' that can be used as a record of professional achievement to support job re-grading applications, professional reviews and job applications (technical requirements for this are described in the TrustDR UML Use Case 5: Public attribution facility)
- Employment option 1 – The institution asserts ownership in the content but grants back to the authors a free worldwide licence in perpetuity to make whatever use of the materials they like, as long as it is not linked to or carry the trademarks of the institution (risk, and reputation management) – the institution carries most of the liability
- Employment option 2 – The institution acknowledges the ownership of the materials by the author but is granted a free worldwide licence in perpetuity by the author to make whatever use of the materials they like, as long as they acknowledge the authorship of the author – liability shared
- Authors are able to restrict access to their materials to parts of the institutions and chosen colleagues – reflects the Rights and Rewards project concept of 'boundaries of trust and willingness to share' also represents the finding of Australian research by John Bell (2005)
- Assistance with creation of metadata
- Provide adequate indemnity insurance
- Provide clear guidance and support and training in IPR
- Provide adequate training in reuse and design
- Provide personal 'sandpit' spaces to experiment and store 'their stuff' and share it with whom they like

7.2 Scenario 2: Encouraging People to Reuse Materials:

- Provide adequate indemnity insurance to protect individuals and your institution
- Provide clear guidance and support and training in IPR
- Have a consistent IPR protocol (a workflow)
- Provide the means to store and attribute the 'learning designs' generated by academics in reusing other people's work
- Provide the ability to restrict access to the objects created (boundaries of trust and sharing) so that people work with whom they trust
- Provide a personal 'sandpit' to play with the repository system
- Provide adequate training in reuse and design (pedagogical, media design and technical)

7.3 Scenario 3: 'A Traditional Course'

- Version 1
    - Created Primarily to support campus-based face-to-face course, materials and modules designed and 'owned' and controlled by individual teachers in the VLE and repository, and changed to reflect their interests

    - Team teaching is not prevalent. Loose control and coordination from centre and department
    - DRM oversight small, learning materials ephemeral and stored locally. Assessments created and delivered by individuals. Employment contracts make little or no mention of IPR in learning materials and are ambiguous
- Version 2
    - Primarily aimed at the lucrative masters/postgraduate market with the same characteristics of version 1

7.4 Scenario 4: A Flexible Delivery Course

- More top-down model but still with some local autonomy, shared teaching materials, team teaching and division of labour to support different delivery modes – with exceptions
- Course and modules designed by a team, materials are shared and relatively permanent, changes to course by individuals more difficult to make
- Teacher and tutor guidance notes may be produced
- Assessments designed and delivered by a team
- Change to course and materials less frequent and may be through some kind of oversight group
- Materials tend to be stored more centrally with some DRM oversight
- Employment contracts make explicit mention of the control and ownership of learning materials.

7.5 Scenario 5: An Online/Distance Learning Course

- Strong central control over course design and materials design
- Teacher and tutor activities, and assessments are all provided centrally
- Much more effort invested in course design and materials design in order to carry part of the pedagogic load
- Team teaching is the norm – those that teach are often not the original course designers
- Economic payback mortgaged over a 7-year cycle
- Materials are; stored centrally and are permanent, and managed, and protected as high value items (utility and cash value) strong DRM oversight
- Change and alteration of materials is strictly controlled
- Materials and IPR are controlled within a clear framework; employment contracts give clear directions about IPR in learning materials and terms of use
- Inclusion of 3rd party materials has to pass through rigorous clearance process.

7.6 DRM continuum in e-learning: mapped onto three organisational business models of teaching

Traditional	**Flexible**	**Distance**
Support for F2F	Hybrid	Mostly Online
←	→	
Decentralised	Materials Management	Centralised
High	Risk	Low
Low	Rights Management	High
Low	Pedagogic Importance/Effectiveness of Materials	High
High	Alteration/Tinkering	Low
Low	Team teaching and Ownership	High
Low	Permanency of materials	High
Low	IPR Awareness/Interest	High
Low	Sustainable	High
Low	Teaching Quality	High
Low	£ Efficiency £	High
Low	Value of Materials	High
Low	Metadata Quality	High
None/Low	Provenance	Detailed
High	3rd Party IPR Risk	Low
Low	Materials Sharing & Reuse	High
Low	ID/Learning Design Skills	High
Loose	IPR Policy	Tight
'Drop & Go'	Repository	Managed

Table 1 Three models of e-learning mapped onto a DRM continuum

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