

Good intentions: improving the evidence base in support of sharing learning materials

Lou McGill, Sarah Currier, Charles Duncan, Peter Douglas

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*"The road to Hell is paved with good intentions."
Samuel Johnson*

1 Introduction

In 2007 one of the key conclusions from the synthesis report 'Sharing eLearning Content'¹ (SELC) was that, while evidence may exist in support of it, the business case for an institution to share learning materials has not been sufficiently well articulated in the UK. In fact, the issue highlighted is rather broader. There is evidence that would support a range of business cases, such as those for:

- lecturers sharing learning materials;
- lecturers using and attributing others' materials;
- institutions putting in place policies whereby learning materials are well managed, so that they can be shared appropriately and reused over time;
- the UK tertiary education sector as a whole putting in place arrangements in support of sharing learning materials.

This report aims to articulate the advantages and imperatives for sharing learning resources using evidence from the UK and elsewhere. This JISC funded study has also identified a number of compelling business cases and has developed a set of variations as a result of studying a range of business models. It highlights some interesting trends as many of the existing business models have reached a level of maturity and are currently under review.

1.1 Terminology

This study first sought to develop common understandings of the terms '*business model*' and '*business case*'. Whilst educational institutions clearly do need to understand and articulate their core business, this approach tends to focus on cost effectiveness and clearly defined products. Educational institutions have a wide range of outputs (products) and, often hard to measure, outcomes (benefits). Whilst this business terminology may be meaningful to the people responsible for managing institutions, it is questionable how far teaching and learning practitioners are likely to respond to it^{2 3}. With regards to the practices around sharing learning resources it is perhaps even more inappropriate. Whilst much of the motivation for encouraging sharing through public funding relates to cost benefits, the concept of sharing may not fit a 'traditional' business model. It is important to be aware of this potential barrier when presenting the '*business cases*' to different stakeholder groups. For the purposes of this study we have used the term '*business model*' to mean a mechanism to illustrate various aspects of an existing service and the term '*business case*' to mean an articulation of the benefits of such a model.

Use of the term '*sharing*' has also raised some questions, as the word usually implies an intent – where someone, or some organisation, chooses to share something of value with either a specific audience or more widely. This is different to '*exchanging*' where both/all parties want, and agree to, share for some mutual benefit. Whilst often overlooked, the difference between these two actions is significant, particularly in relation to business models and business cases. In fact the two models we have chosen to concentrate on within this study are examples of both sharing (open model) and exchange (subject-based model) as we will discuss later. Terms such as reuse and re-purposing may imply an underlying principle of sharing (sometimes enforced as a condition of funding), but people may not necessarily be consciously intending to share. Some take, some give and some do both, for a range of reasons. For the purposes of this study we have agreed that whilst sharing and exchange are processes (either conscious or not) it is the intent behind the various initiatives, activities and services that is important to the business cases.

1 <http://ie-repository.jisc.ac.uk/46/>

2 Guthrie, K et al (2008) *Sustainability and Revenue Models for Online Academic Resources: an Ithaka report*, Strategic Content Alliance www.jisc.ac.uk/media/documents/themes/eresources/sca_ithaka_sustainability_report-final.pdf

3 Diane Harley, et al., (2006) *Use and Users of Digital Resources: A Focus on Undergraduate Education in the Humanities and Social Sciences*. Center for Studies in Higher Education, UC Berkeley. <http://digitalresourcestudy.berekeley.edu>

We have used the term '*service*' to describe the various infrastructures that exist to support sharing, but must stress that this includes a wide range of activities including those supported by formal repositories and/or open social software services, as well as informal mechanisms within or across institutions, between lecturers and/or students. This term is used within the business model template and was deliberately chosen to highlight the wide range of activities, mechanisms and support that are offered to encourage and facilitate sharing, including, but not limited to static storage of content.

2. Method

2.1 Desk research and interviews

Desk research was highly productive for this study, in particular in the area of open sharing, due to a number of significant and timely publications and initiatives. This was augmented by in-depth interviews with key players to discuss the business models and their benefits, barriers and potentials.

2.2 Symposium on Implementing National Learning Resource Repositories

Intrallect organised this two-day symposium in June 2008, which provided an opportunity to reflect on some key issues, identify trends and discuss lessons learnt. This event produced some useful resources which helped to identify measures of success for national repositories and motivations for people to share learning resources through these formal services. There is much to learn about the nature of sharing in UK HE, and models that may support this, by examining the development and future directions of nationally funded services.

2.3 Joint working

At an early stage the team forged a good working relationship with the HEFCE-funded Shared Services Project⁴ based at the Open University (OU) investigating the feasibility of institutions sharing curricula. This project began in January 2008 and finishes in December. There were significant synergies between the two studies, as both aimed to identify and articulate business models and business cases in support of the sharing of learning materials.

The two projects exchanged a range of materials, including interim and draft reports, and other documentation developed during the information gathering process, such as business case templates, interview/survey questions, etc. The HEFCE project began in early 2008 and already had some valuable information, both in relation to issues and challenges affecting the sharing of learning materials, as well as having developed mechanisms to engage and involve institutions in providing information about these activities. The JISC project team had developed a range of useful contacts and information through prior experience, events and discussions that was useful to the HEFCE team. The HEFCE feasibility study is based on practical experience with institutions. The JISC study aims to focus on both open sharing and subject-based sharing. It is anticipated that the HEFCE project will provide an interesting model of the latter, as it focuses on common modules for undergraduate courses.

The two projects had a remit to collect and collate information about current practice and carried out focussed interviews with key individuals. We also discussed the possibility of carrying out some broader surveys to obtain a wider picture of attitudes to sharing in the UK. The two teams did identify a number of key questions for such a survey but it was agreed that we did not have the resources to conduct such a survey as part of the existing two studies. The JISC-funded RePRODUCE Projects⁵, in particular, presented an excellent potential group to survey in relation to both curricula and learning resources but timing issues prevented this. However we took the opportunity to feed our thoughts to the team supporting the evaluation of the RePRODUCE Programme. This went some way to inform the development of their long-term evaluation plan, and the outcome of this is likely to continue to inform this area of work.

4 <http://www.hefce.ac.uk/finance/shared/>

5 <http://www.jisc.ac.uk/whatwedo/programmes/elearningcapital/reproduce>

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Outcomes of this joint approach included the sharing of potential interview questions, the development of a mindmap of an appropriate business model and a business model template to apply to a range of services/approaches to sharing. Harriet Buckingham, Project Manager of the HEFCE Project tested the template with the OpenLearn⁶ model and the newer OU Social:Learn model⁷ and conducted an interview with Patrick McAndrew (involved with the OpenLearn and POCKET⁸ initiatives).

2.4 Business models

Collating and analysing business models was an important part of the study and a template was developed to enable the articulation of a range of existing business models for sharing learning resources. In order to make effective business cases it was necessary to articulate these models and identify common elements and key decision points. Using a standard template to map the variety of models enabled this study to begin to highlight key points of connection between factors, decision making points, opportunities and stresses/restrictions. The template was tested using two significant models: OpenLearn and JORUM⁹. Minor revisions were then applied and the resulting template was used to describe the following models of sharing: OpenLearn (OU), Social:Learn (OU), JORUM (including JorumOpen), NDLR¹⁰ (Ireland), CeLLS¹¹ (Collaborative e-Learning in the Life Sciences), COLEG Scottish FE repository¹², International Virtual Medical School - IVIMEDS¹³, IRISS Learning Exchange¹⁴, RePRODUCE projects, SURF WBL¹⁵ (Staffordshire University Regional Federation), EdShare¹⁶ (University of Southampton Institutional Learning Materials Repository) and some informal models.

The templates were completed from publicly available information, augmented and approved by appropriate individuals. Much of this information is highly sensitive and the completed templates are not being made available to the public. Most of the models were in some form of transition and it proved difficult to capture the changing nature of the models.

2.5 Business cases

A business case at its most basic could be described as an explanation of the likely benefits of taking a particular action or combination of actions, and these benefits may often be different for each group of stakeholders. They often take the form of written reports which also identify challenges of, and possible solutions for, various approaches.

The activities required to complete the business model templates led to some useful information around intent and motivation to share, and this contributed to the development of the business cases presented in this study. The business cases are presented here in a table which offers suggestions for which benefits are most likely from each model. It is anticipated that this table could be utilised (with some further development) as a tool to help institutional managers and staff to consider which of the benefits are important to them (at either strategic, policy, operational or practice levels). Once they have identified the benefits they could then identify which model or models could best support that approach.

This highlights the importance of acknowledging that no one model fits all and that often a combination of models may be appropriate. The tool could also be used to support a dialogue within institutions by identifying what benefits the institution and wider community already enjoys from existing sharing activities. It is fair to say that most educational institutions have not articulated the various sharing activities taking place, particularly those coming from a bottom-up approach.

6 <http://openlearn.open.ac.uk/>

7 <http://www.slideshare.net/mweller/sociallearn-introduction/>

8 <http://www.jisc.ac.uk/whatwedo/programmes/reppres/sue/pocket.aspx>

9 <http://www.jorum.ac.uk>

10 <http://www.ndlr.ie/>

11 <http://www.jisc.ac.uk/whatwedo/programmes/elearningsfc/cells.aspx>

12 <http://www.coleg.org.uk/coleg/69.html>

13 <http://www.ivimeds.org/>

14 <http://www.iriss.ac.uk/learnx/>

15 <http://www.jisc.ac.uk/whatwedo/programmes/x4/surfwbl.aspx>

16 <http://www.edshare.soton.ac.uk/>

One of the key recommendations from the JISC CD-LOR¹⁷ project was that "Impact and added value of using Learning Object Repositories (LORs) must be demonstrated to users.". Business cases are a useful means of communicating impact and added value to users, as long as they are presented in a format and using terminology that is easily understood by those users on their own terms.

2.6 Critical friends and feedback

The team established a group of people to act as critical friends and feedback on reports and business cases. These came from a range of key agencies and JISC projects. This group was added to as the project progressed and is listed in the acknowledgements area of this report.

3 The ever changing landscape of sharing

3.1 Background

For many years we have been trying to define and understand the affordances of digital resources to support learning^{18 19}. We have discussed the issue of granularity and tried to distinguish between information and educational content^{20 21}. The debate has raged around the value of re-usable learning objects^{22 23 24}. In the UK we have spent millions of pounds developing a critical mass of content²⁵. The repositories community have been rigorously working to improve access, preservation, and use of this at national and institutional levels²⁶. The standards communities have been working to ensure that interoperability is enabled to facilitate the re-use and re-purposing of content and the development community have been producing software to support the development of content²⁷. Various projects, funded by JISC and other funding bodies, have been producing good practice guides, toolkits, and case studies to support the sharing of lessons learned. The barriers to sharing have been identified as issues around ownership, rights and culture and yet we are aware of informal small scale sharing between academics²⁸.

Despite all this investment we are still not convinced that those involved in supporting learning and teaching are making effective use of this content, particularly as 'effective' means different things to different stakeholders within the field. Many of the initiatives funded worldwide are based on a fundamental assumption that people want to share, re-use and re-purpose each others materials. However a TRUST DR Report²⁹ in 2007 highlighted that:

'there is little tradition or articulated desire for sharing learning materials in the sector in the ways made possible by these technologies. As we have argued current practice is not characterised by the sharing of learning materials or team work and centrally organised and designed courses that would be normally associated with these technologies.'

However, the CD-LOR Personal Resource Management Strategies Review³⁰, found that around 70% of respondents to their 2006 survey re-purposed resources created by others. These two

17 <http://www.academy.gcal.ac.uk/cd-lor/>

18 Littlejohn, A. and Buckingham Shum, S. (2003). (Eds.) *Reusing Online Resources* (Special Issue) Journal of Interactive Media in Education, 2003 <http://www.jime.open.ac.uk/2003/1/>

19 Littlejohn, A., I. Falconer & L. McGill (2006) *Characterising effective e-learning resources*, Computers & Education doi:10.1016/j.compedu.2006.08.004

20 Duncan, C Granularisation, Chapter 2 of: *Reusing Online Resources: A Sustainable Approach to eLearning*, (Ed.) Allison Littlejohn. Kogan Page, London 2003 www.intralelect.com/index.php/intralelect/content/download/416/1746/file/Granularity.pdf

21 Pegler, C. (2003). Learning Objects in Higher Education: Changing perceptions of size and shape. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2003* (pp. 1130-1133). Chesapeake, VA: AACE. http://www.edutlib.org/index.cfm?fuseaction=Reader.NoAccess&paper_id=12549

22 Friesen, N. (2004) Three Objections to Learning Objects and E-Learning Standards. In McGreal, R. (Ed.) *Online Education Using Learning Objects*. London: Routledge. Pp. 59-70. Draft version online at: <http://www.learningspaces.org/n/papers/objections.html>

23 Wiley (2002) The Reusability Paradox <http://cnx.org/content/m11898/latest/>

24 David Wiley (2006) Blog post on the death of LO debate <http://opencontent.org/blog/archives/230>

25 JISC programmes <http://www.jisc.ac.uk/whatwedo/programmes/digitisation> <http://www.jisc.ac.uk/whatwedo/programmes/x4l.aspx>

26 <http://www.jisc.ac.uk/whatwedo/programmes/reppres>

27 <http://jisc.cetis.ac.uk/domain/educational-content>

28 <http://ie-repository.jisc.ac.uk/46/>

29 http://trustdr.ulster.ac.uk/work_in_progress/workpackages/WP1-2/theBusinessOfElearning.php

30 http://www.academy.gcal.ac.uk/cd-lor/CDLORdeliverable7_PRMSreport.pdf

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surveys are using two different terms (sharing and re-purposing) which may explain the slightly contradictory nature of the results. In fact the market in this arena is actually quite complex and many of the business models we examined have complicated relationships between suppliers and consumers of content – both key stakeholders in the services but with very different motivations, drivers and needs. Interestingly a key driver of the more recent Open Educational Resources movement is the desire to make educational resources available to learners on a global level. This is a very different fundamental motivation, but there is evidence that this has also encouraged sharing between teachers³¹.

How many other businesses would invest so much money without first understanding its market? A recent Ithaka report on sustainability and revenue models for academic resources identified a lack of attention to user needs, preferences and behaviours³². We need to develop a clear understanding of what teachers want to share, with whom and how they choose to facilitate this. Are there significant variations in sharing behaviours across different subject disciplines? Kemp and Jones (2007) conclude that subject discipline is an important factor affecting how academics share³³. Some subject disciplines report a deficit in the critical mass of materials in their area, which often leads to formal consortia approaches to developing content in a particular subject area. Are teachers likely to share and exchange information and practice rather than learning materials? If we support teachers to share practice and/or learning designs would this encourage sharing of materials as a follow-on activity? If teachers were given mechanisms/networks to support their own sharing would this lead to increased sharing as confidence grew about their own offerings? It is widely acknowledged that a significant barrier to sharing learning content between academics is a lack of confidence in the quality, concerns over ownership and an expectation that people will only want to use 'highly produced' content. Several of the comments highlighted in the SELC report echo some of these issues.

The projects we have looked at have found that many people would like to share with small groups or to restrict access to their materials. Underlying this are insecurities about quality and attribution issues and uncertainties about IPR and ownership. ...

tutors are indeed willing to share e-resources, but that willingness depends on 'who with' and 'how'.
Andrew Rothery, University of Worcester, WM-Share

We attempted to kick start the process of sharing by focusing on the positive altruistic reasons for sharing. This involved working with the keen people within the community to begin with. We also built in different access levels into our repository so that depositors could keep materials private, share materials with a specific group (e.g. a department), share internally or make materials completely open. **Steve Loddington, Rights and Rewards**

The issue of quality is highly significant both in relation to people having confidence to deposit their own materials and also in relation to re-use. People need to be convinced that resources are good enough to be worth reusing, and are they constructed in such a way that different reusable resources actually fit together rather than overlapping in multiple, confusing ways. This highlights the importance of institutions having appropriate infrastructures and mechanisms to support staff in producing high quality, reusable resources. The HEFCE funded RLO-CETL³⁴ (Centre for Excellence in the design, development and use of learning objects) emphasises the need to support the multi-disciplinary community of practitioners – academics, developers and students that make up the producers and users of learning resources.

Sharing still features as a current topic of debate and has been the subject of several interesting and ongoing blog discussions. It is interesting to hear the frustration of many people who have been involved in projects which are fundamentally about supporting sharing. The following is just a

31 MIT OCW Evaluation <http://www.mit.strathmore.edu/OcwWeb/Global/AboutOCW/evaluation.htm>

32 <http://www.ithaka.org/strategic-services/sustainability-and-revenue-models-for-online-academic-resources>

33 Kemp, B., & Jones, C. (2007). *Academic Use of Digital Resources: Disciplinary Differences and the Issue of Progression revisited*. Educational Technology & Society, 10 (1), 52-60. http://www.ifets.info/journals/10_1/6.pdf

34 <http://www.rlo-cetl.ac.uk/>

small summarising snippet from Scott Leslie (BC Campus)³⁵ of a long post which created a flurry of passionate responses.

This is a long post, born out of years of frustration with ineffective institutional collaborations. If you only want the highlights, here they are: grow your network by sharing, not planning to share or deciding who to share with; the tech doesn't determine the sharing - if you want to share, you will; weave your network by sharing what you can, and they will share what they can - people won't share [without a lot of added incentives] stuff that's not easy or compelling for them to share. Create virtuous cycles that amplify network effects. Given the right 'set,' simple tech is all they need to get started.)

The evidence generated by this study would indicate that the community is moving towards an understanding of this and adapting services to support such approaches to sharing.

Another debate has arisen from a discussion on Open Educational Resources (OERs) and OpenCourseWare (OCWs) around the focus on content and not the teaching and learning process on Brian Lamb's (University of British Columbia) blog³⁶. This is a topic that is clearly relevant across both open and closed access services and will be picked up later in this report. The interest in the Open movement is currently generating a return to some of these questions that we have been grappling with for many years.

However several people interviewed for this study have indicated that there is a clear need for some large scale research evidence about how people actually share within, across and outside educational institutions. This research should also examine motivations for sharing of different stakeholder groups (students, teachers, Learning technologists, etc.) and explore in more depth some of the open sharing models emerging in the world outside education – crowdsourcing³⁷ and ideagoras³⁸, like CurrentTV³⁹, Threadless⁴⁰.

3.2 Significant Drivers

There are several recent developments that have changed the way teachers develop, store and share their learning materials. Some of these could be argued to have had a negative impact on sharing, such as the rise of the closed access VLE, which encouraged teachers to take resources previously on the web into the safe and restricted storage space of their institution. Whilst the growth of VLEs did encourage the development of content in digital forms they did not encourage sharing within or outside the institutions⁴¹. Issues around a lack of transparency were significant as institutions could not easily assess the quality of the resources uploaded to the VLE, and academics were not used to being transparent about the quality of either their teaching practice or resources. Teachers also began to experience barriers and concerns around ownership, trust and rights, and several initiatives have focussed on these issues as summarised in the SELC report.

The Creative Commons⁴² (CC) Licensing scheme has already started to have significant impact on eliminating some of the barriers around ownership, attribution and re-use. The increasing adoption of CC by JISC on its web site and for its reports as well as the move towards JORUMOpen using CC licences reflects the widespread recognition and acceptance of Creative Commons.

The rise of social networking tools, such as flickr, Facebook and blogs has caused a revolution in approach for both individuals and institutions as they have begun to embrace a more open approach to sharing information, practice and resources⁴³. A significant outcome of Web 2.0 developments is an acknowledgement of the potential of social software to support social learning,

35 <http://www.edtechpost.ca/wordpress/2008/11/08/just-share-already/>

36 <http://weblogs.elearning.ubc.ca/brian/archives/049209.php>

37 <http://en.wikipedia.org/wiki/Crowdsourcing>

38 http://www.businessweek.com/innovate/content/feb2007/id20070215_251519.htm

39 http://en.wikipedia.org/wiki/Current_TV

40 <http://en.wikipedia.org/wiki/Threadless>

41 Wiles, K & Littlejohn, A (2003). Supporting sustainable e-Learning: a UK National Forum. In G.Crisp, D.Thiele, I.Scholten, S.Barker and J.Baron (Eds), *Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education*. Adelaide, 7-10 December 2003.

<http://www.ascilite.org.au/conferences/adelaide03/docs/pdf/730.pdf>

42 <http://creativecommons.org/>

43 Franklin, T and van Harmeling, M (2007) *Web 2.0 for Content for Learning and Teaching in Higher Education* <http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-content-learning-and-teaching.pdf>

as well as the development and sharing of student-generated content. The increasing ease of tagging and sharing content through social bookmarking sites^{44 45} such as Delicious⁴⁶ coupled with the power of RSS feeds to deliver content on demand⁴⁷ has the potential to transform formal and informal learning as well as the sharing landscape. There is also increasing recognition that the context in which content is developed for teaching and learning is crucial. This relates to wider concerns about the provenance of the material and the differences in pedagogical approach taken by developers working across different disciplines and communities⁴⁸. While reuse across contexts may be possible it is not easy, as Brosnan⁴⁹ (2006) observed: 'the act of using a learning object developed elsewhere can be conceptualised as a complex process of "re-contextualisation"'.

We don't yet know if the developments and activities happening in immersive worlds, such as Second Life, will encourage or support sharing. It is not within the scope of this study to investigate this issue in depth but may be an area for future investigation through the regular and ongoing surveys⁵⁰ conducted by John Kirriemuir (advisor on Second Life to eduserve). Of particular interest are questions of whether the widely accepted barriers to sharing (cultural, technical and legal) still manifest in immersive worlds.

It may also be worth investigating the likely impact of semantic web developments such as Twine⁵¹ and zigtag⁵² which aim to support enhanced finding of content but also offer social networking features to encourage participation within the community.

3.3 Repositories

Repositories (both formal and informal) are an important mechanism to support sharing of learning resources and the UK has a particularly well established community that has been concerned with enabling sharing since the turn of the century. Much of what we have learned about sharing has come from the repositories movement and this experience should inform the future approaches to support sharing. This study has looked at a range of repositories for educational materials, from formal national services to less formal personal repositories.

Developments for institutional repositories have been led by the need to share, preserve and manage research outputs and there has been some discussion around these in relation to learning materials. Whilst there are some similarities in issues relating to the two types of content the community seems divided about how far these should be considered together. Lorna Campbell's JISC CETIS blog⁵³ is currently summarising some of these discussions.

Developments such as the new EdShare institutional repository for learning materials at the University of Southampton reflects a growing trend as several Universities are also developing similar specialist services in parallel to research based repositories, including Newcastle, Leeds Metropolitan, Derby, Oxford Brookes, Leeds University and Nottingham Trent. Edshare plans to take a pragmatic approach to encouraging the deposit of materials by allowing academics to decide how widely they want to share. This is likely to overcome some of the issues discovered by the SPIRE Project⁵⁴ around a trend of non-deposit in repositories due to a lack of control over who could see/access the resources, and concerns over perceptions of quality.

A recent JISC study carried out by Evidence Base (as yet unpublished) on '*Attitudes to the preservation and curation of e-learning materials*'⁵⁵ has reported that whilst sharing and re-use are

44 http://dfi.cetis.ac.uk/wiki/index.php/Shared_Resources2

45 http://delicious.com/learning.resources.and.activities/curriculum_design

46 <http://delicious.com/>

47 <http://www.slideshare.net/sheilamac/davies-strathclyde>

48 Pegler, C (2008) *Contextualising Content across Communities: Using Social Tools to Share Learning*. NDLR Second Symposium workshop University College Dublin, 2nd December http://asx.heanet.ie/ndlr/symposium2008/14_ChrisPegler.aspx

49 Brosnan, K. D. B. (2006) *Initial Participation in a learning-object exchange network: A practice theoretic perspective*. PhD Thesis. Lancaster University, UK

50 <http://www.eduserve.org.uk/foundation/studies/slsnapshots>

51 <http://www.twine.com/>

52 <http://www.zigtag.com/>

53 <http://blogs.cetis.ac.uk/lmc/2008/11/21/exclude-teaching-and-learning-materials-from-the-open-access-repositories-debate-the-discussion/>

54 <http://spire.conted.ox.ac.uk/>

55 <http://www.jisc.ac.uk/preservation>

seen as important drivers for preservation there is still little evidence to indicate that either of these are actually happening. Perhaps specialised institutional repositories will prove to be the mechanism to increase the transparency of learning and teaching materials and give academics confidence to share. Perhaps also we should be encouraging the students to directly utilise the repositories – they may turn out to be more dedicated users.

The JISC funded Developing Repositories at Worcester (DRAW) Project⁵⁶ has developed a recipe for success⁵⁷ in getting lecturers interested in depositing their material. This was the result of discussions at a Repositories Programme event in 2008 and reflects a wide range of lessons learned. One ingredient from this recipe illustrates many of the points raised by this study:

There are many different kinds of educational resources, and these are different from research material. We suggest that what matters is having the right user interface for each different type of material, and to design different interfaces right from the start, whether there is just one or whether several underlying repository systems.

3.3.1 Symposium on National Repositories

This two day Symposium aimed to review approaches to implementing national learning object repositories and outline recommendations of best practice. Attendees included staff from Intrallect Ltd., JORUM, COLEG, NDLR and NCeL (National Centre for e-Learning, Saudi Arabia).

It was very clear throughout the discussions that the purpose of, and need for, National Learning Resource Repositories was much wider than the storage of learning content. It was acknowledged that a key purpose was to facilitate and encourage sharing and re-use. Whilst this did relate specifically to learning resources it actually involves sharing at many levels in relation to learning and teaching. This raised much discussion around changing culture and practice of both individuals and institutions. It was felt that the increasing engagement with the benefits of flexible learning approaches⁵⁸ was of significance and this has the potential to impact on national repositories but, more importantly that such services had great potential to lead, support and encourage such change⁵⁹.

The nature of different funding models shaped the services of the national repositories represented at the symposium and reflected a range of drivers or motivational factors. Clearly different motivational factors are important at different times for each stakeholder group. The motivational factors identified included:

- Sharing and re-use of learning resources
- Re-purposing of publicly funded content
- Providing access to content locked in institutional VLEs
- Providing a range of benefits to institutions including: branding, marketing, showcase of quality, encouraging quality and staff engagement, improving learning & teaching approaches/practice, showing compliance to funders
- National showcase of learning resources
- Supporting the embedding and sustainability of e-Learning
- Powerful enablers of social and cultural change
- Effective distribution and storage of learning resources
- Supporting and encouraging discussion on a wide range of practices (developing, sharing, re-using, storing and retrieving content and also on effective use in learning and teaching, policy, R&D, etc) and at all levels, (subjects, local, national, international)
- Supporting and enabling Communities of Practice (CoPs)

56 <http://www.jisc.ac.uk/whatwedo/programmes/reppres/sue/extendembedworc>

57 <http://eprints.worc.ac.uk/451/>

58 Casey, J. and Wilson. P. (2006) *A practical guide to providing flexible learning in further and higher education*. Quality Assurance Agency for Scotland. Published on the web at: <http://www.enhancementthemes.ac.uk/themes/FlexibleDelivery/publications.asp>

59 Casey, John et al (2007) *Geronimo's Cadillac: lessons for learning object repositories*, TRUSTDR report http://trustdr.ulster.ac.uk/outputs/Geronimo_casey_et_al.pdf

- Notion of living laboratory – repository as a means to research actions in learning and teaching
- Preservation and archiving of learning resources
- Potential ‘shop window’ for commercial publishers – taster content
- Role as community memory – history – gathering intelligence
- Shared authorship results in best use of a range of available skills - expertise from subject experts, publishers or other commercial inputs, technical, information management, etc...

There were several useful outputs from the event, including a series of mind maps that captured some of the detailed discussion. One of these is included in Appendix 1 as it focuses on measures of success.

3.4 Recent funding approaches and lessons learnt

In addition to the wide ranging work of the Repositories Programme there have been some very exciting and innovative pedagogically led approaches to using digital content in real learning contexts (Digital Libraries in the Classroom (DLIC)⁶⁰ and SFC eLearning Transformation Programme⁶¹). The primary focus of the projects was around learning and teaching practice rather than storage, preservation, tools, repositories, rights or content development (although these issues were significant for the projects). These have highlighted the need for multidisciplinary cross team working and have resulted in an important sharing of understandings between academics, educational developers, software developers, librarians and learning technologists. This exchange is perhaps one of the most significant aspects of sharing within the educational community where people from across an institution learn to understand the significant issues of each smaller community⁶². Academics leading these initiatives have been engaging with issues of metadata and IPR whilst software developers are engaging with learning and teaching issues at a much deeper level. Some of these projects have also been investigating issues around content generated during the learning process by students, which brings a whole new set of issues to do with ownership, trust, preservation and access.

These projects have highlighted the complexities of sharing across professional disciplines and the cost of such sharing in terms of time invested. Many large scale initiatives in recent years have attempted to achieve this across institutional boundaries, which has different challenges but brings together communities of practice around subject disciplines, which often have aspects of common curriculum or at the very least the need to deliver a common skill set. These initiatives may have crossed institutional boundaries but always point to the need to recognise the 'specialness' or unique culture of each organisation⁶³. This institutional-centric view of the world and their subject-discipline is one of the reasons for low levels of sharing amongst the HE community. This is in contrast to the FE community which has national frameworks to support curricula and assessment^{64 65}. This community appears to be more culturally inclined to use publicly funded resource collections such as the NLN materials⁶⁶, and the and the FERL website (now incorporated into the Adult Learning Inspectorate's good practice database⁶⁷). The common assessment framework in Scotland contributes towards the fact that the well established COLEG⁶⁸ community has enabled successful sharing across colleges for some time and is now developing a repository to further support this successful model.

Many of the recent large scale initiatives around the development of content have actually been about transforming teaching practice through the potentials offered by new technologies. Whilst the learning materials have been an important output from these projects there has been a significant

60 http://www.jisc.ac.uk/programme_dlitc.html

61 http://www.jisc.ac.uk/elearning_sfc.html

62 McGill, L. et al (2005). *Creating an information-rich learning environment to enhance design student learning: challenges and approaches*. British Journal of Educational Technology 36(4) <http://www3.interscience.wiley.com/journal/118683389/abstract>

63 SFC e-Learning transformation stories <http://www.jisc.ac.uk/whatwedo/programmes/elearningsfc.aspx#downloads>

64 <http://www.dcsf.gov.uk/furthereducation/uploads/documents/6514-FE%20White%20Paper.pdf>

65 <http://www.scotland.gov.uk/Publications/2004/11/20178/45862>

66 <http://www.nln.ac.uk/>

67 <http://excellence.qia.org.uk/page.aspx?o=100800>

68 www.coleg.org.uk/

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push from funding bodies to ensure that their investments produce developments that are sustainable after the funded period. One of the most significant ways to achieve this is to change and improve the practice of staff⁶⁹.

The cost of producing and managing high quality learning materials is steep⁷⁰, hence the focus on encouraging sharing and exchange of materials to make effective use of skills and knowledge within the community. Funders and institutions have a vested interest in reducing both duplication of effort and non transparent practices relating to teaching content, which is in stark contrast to traditional practice and perceptions around ownership of teaching materials. This clash of practice and culture with funders' expectations has contributed to the slow uptake of all the tools and standards to support sharing, re-use and re purposing. The Ithaka report on sustainability suggests we need a systematic understanding of the mechanisms for pursuing sustainability in not-for-profit projects, and includes a discussion of several major revenue generating methods, including philanthropic support, subscription, advertising and other models.

There is evidence that some of the recent initiatives have led to change. When questioned about sharing or re-using others learning content there is a generally positive response, usually followed by a list of the barriers. These barriers have been well documented but as suggested in the SELC report may not actually be real barriers but perceived obstacles.

As suggested earlier it might be interesting to make repositories more open to learners to encourage use and reuse of the learning and teaching resources. An open repository which offers direct access to learning and teaching materials for students may be more appealing if they interacted directly with tools that they already use. For example the SWORD deposit tool for Facebook⁷¹ launched in November provides a mechanism to deposit into a repository from an everyday social tool. It will be interesting to see the development of the new OU approach with their Social:Learn⁷² framework which aims to allow learners to engage with peers, resources and different forms of learning guidance via "the social web" and configure their own tailored programme of tools, learning resources, and support networks.

3.5 RePRODUCE Programme

The 20 RePRODUCE (Re-purposing & Re-use of Digital University-Level Content and Evaluation) projects⁷³ managed by the JISC e-Learning team were expected to yield some useful information about the factors that encourage use and re-use as they have been tasked to develop, run and quality assure technology enhanced courses using reused and re-purposed learning materials, sourced outside their own institution. These modules will be run with a real cohort of students and projects will evaluate and report on this. The intended outcomes of this work are:

- To stimulate and inform change in the sector through enhanced capacity, knowledge and skills around the use of information and communications technology to support learning and teaching
- High quality external learning content used more often
- To facilitate the transfer of learning content between institutions, repositories and external web 2.0 content storage
- Case studies documenting the cultural issues regarding the sharing of content

Initial plans for this study were to conduct interviews and to offer a workshop at the October Programme Meeting. Early investigations revealed that the programme meeting agenda had already been established and did not offer time for a specific workshop. However we did manage to work with Helen Beetham, Consultant to the JISC eLearning Learning Resources and Activities strand of work and critical friend to this study, in considering the kinds of evaluation questions that project teams should consider. We had identified a series of questions that would be relevant to ask the projects and these were shared with Helen, who held an evaluation workshop at the

69 <http://www2.napier.ac.uk/transform/why.htm>

70 Duncan, C (2003) *The Value of Managing Learning Objects*. Intrallect White Paper
http://www.intrallect.com/index.php/intrallect/knowledge_base/white_papers/the_value_of_managing_learning_objects

71 <http://blog.stuartlewis.com/2008/11/17/launched-today-the-facebook-repository-deposit-application/>

72 <http://www.open.ac.uk/blogs/sociallearn/index.php>

73 <http://www.jisc.ac.uk/whatwedo/programmes/elearningcapital/reproduce>

October meeting. Timing issues have resulted in us gleaning less from the projects than anticipated but it is highly likely that the final evaluations of this programme will provide some very interesting information to JISC.

Interviews with Liam Earney from the CASPER support project⁷⁴ have provided some early findings from the programme that are worth recording here. Some of the projects have made significant progress in identifying potential content for re-purposing and re-use, and have managed, often with the support of the CASPER team, to clear the content as required. These are generally those projects which had existing institutional support teams to develop content and a prior understanding of both the issues, and the amount of time such activities take. It should be noted that many of the projects are led by academic teams rather than educational developers or learning technologists and for some this is a whole new and very challenging landscape. Many projects appear to have underestimated the complexity of re-using and re-purposing, the difficulties or clearing rights and the sheer amount of staff time that such activities take. It will be very interesting to see how many of the projects report that there were cost benefits in re-purposing, as opposed to developing the resources themselves from scratch, and how many would, in future, take this approach again.

The CASPER team have identified issues around projects understandings of the concept of re-purposing compared to re-use and there appears to be a preference for 'good enough' and 'easy to use' resources. Should we be surprised at this? The academic view appears to be that the learning context is where the pedagogic purpose is changed, adapted and re-purposed. Not surprising either, we could argue. Many of the projects prefer to link to dynamic content rather than disaggregate complex objects, with sometimes valid reasons – for example the advertising course at Coventry University wants to link to the Guinness website as this reflects current trends in advertising and requires no maintenance or updating on the teachers part.

Another interesting area to examine is the approaches the teams have adopted to find the content they plan to use. It will be interesting to find if many have used JORUM, OpenLearn or collections of publicly funded materials. Early evidence indicates that most want to use Google to find resources. So far they have not made significant use of open content and it will be interesting to find out if this is due to lack of knowledge of collections, or if it relates to quantity and quality of collections in their subject disciplines. Clearly there is also likely to be a large amount of very valuable information on rights clearance and how this affects choices of which content to actually use.

3.6 Sharing lessons learnt

One of the most frustrating problems for funders of development projects is in making the outputs accessible and appropriate for the wider community. The number of projects funded to develop content, tools to re-purpose such content, repositories and services to support the effective use of that content are numerous. The number of cookbooks, guides, tool-kits, case studies and actual content is, in itself difficult to manage, but it is the lessons learnt that we, as a community, consistently fail to heed. It is interesting to note that many of the interviewees in our study identified 'Test-bed approaches – needing to learn about sharing/re-purposing/re-use' as a fundamental intention for their business model. This indicates a significant cultural imperative to 'learn for themselves' and could explain an unwillingness to find out how institution A did it because: it wasn't invented here; our institution has different needs; we learn by doing.

How then do we maintain a balance of supporting institutions and staff to learn from the past and experiment in the present. Communities of practice (CoP) approaches where people share their experiences may be useful, as well as traditional methods such as papers and conferences. The CoP approach to sharing practice and resources will be discussed later in this report.

74 <http://casper.jiscinvolve.org/>

4 Business models

The JISC CD-LOR study suggested that learning resource repositories need to be linked to organisational strategy and objectives. This recommendation relates to any business model where the intent stated should be aligned to any organisational objectives. Constructing a business model based on that intent should reveal whether a repository needs to be part of the organisational strategy or whether some other service or tool is needed. In fact, the idea of a business model was considered to be one of the repository "dimensions" within the CD-LOR project. "Dimension" in the context of the CD-LOR project represented something akin to a specific property of the repository service. Out of all the dimensions considered in the project (others included Purpose, Sector, Subject discipline), business model was the most complex and it was clear that this dimension would benefit from a more in depth investigation. This study provides an excellent opportunity to take forward this recommendation.

A template was developed to enable the articulation of a wide range of existing business models for sharing learning resources. In order to make effective business cases it was felt necessary to articulate these and identify common elements and key decision points. Using a standard template to map the variety of models enabled this study to highlight key points of connection between factors, decision making points, opportunities and stresses/restrictions.

The business models for sharing can be broken down into three sub models or frameworks.

- The financial model
- The service model
- The supplier/customer model

All of these sub-models are affected by some overarching issues which include: issues around competition and choice; variety and range of stakeholders; sustainability; adaptability and flexibility of model to change; partnerships and networks.

The three sub-models are closely related and are broken down for simplicity of representation.

Financial models

The various financial models could be said to shape the resulting services but are also the element of a business model which needs refining as services go through various stages of maturity. Clearly finance models are closely linked to sustainability of services.

Service models

Crucial to all models is an understanding of the market. This is, perhaps an area where our sharing models/services have previously not been so well prepared. If the service model is about the "route to market" it stands to reason that we know the market. Often there may be several tiers to a market – the primary group/community to which the service is closely modelled. There may be secondary markets (either known at start-up or emerging through queries/use) that the service can serve. This may affect future development and funding models if the new market is prepared to be involved in funding/contributing in some way.

Supplier/Consumer models

In relation to sharing learning resources, suppliers and consumers may often be from the same sector, community or group. So we could say that teachers in FE and HE are the group of people who are both supplying or consuming the resources. In reality there are so many different contexts of use, and such variation within this broad group, even within one department of one institution, that it is not easy to develop a generic model. The groups that are contributing may not actually be consuming, consumers may also be suppliers but not necessarily.

The template is included at **Appendix 2**. It was used to gather information from a wide range of models including national, institutional, regional, open and subscription membership models. This was invaluable in mapping a general picture of the current landscape as well as considering how far we've come and where we are heading. Following the general analysis we look more closely at

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the two focus models for this study which are the subject-based models and the open sharing models

4.1 Good Intentions: Initial Business Models

The first UK-based projects dedicated to establishing services or spaces to enable sharing of learning materials (e.g. SeSDL⁷⁵, Jorum+⁷⁶, HLSI⁷⁷, Stòr Cùram⁷⁸) began with an ideal: that teachers in HE, FE and WBL/CPD would share and re-purpose their learning materials, using the Web as a medium, with the support of interoperability standards, and repository platforms utilising those standards. This ideal was ahead of the curve, both in terms of institutional culture and the Web itself; it was quickly circumscribed by some insurmountable (at the time) barriers related mainly to policies (or the lack thereof) around intellectual property rights within funding bodies and institutions; and in terms of cultural practices amongst academics. As mentioned earlier many of these barriers have been overtaken to some extent by the swift proliferation of Web 2.0 technologies and a range of user-friendly, free services supporting a culture of sharing and community-building online. This section looks at the initial business models of some of the early sharing initiatives, and how they have either ceased, or had to transform themselves to survive; however, it is worth remembering that the initial ideal lives on, and is coming closer to being a reality thanks to the above-mentioned new technologies and attitudes.

4.2 Good Intentions: Early Learning

Two very early initiatives which have not survived to the second half of this decade, SeSDL and HLSI/YHLearning, were both nevertheless useful and influential in the ongoing study into how to facilitate sharing of learning materials⁷⁹.

SeSDL was a national (Scottish), centrally funded pilot looking at supporting staff developers in Scottish HE in sharing their teaching materials. The project investigated the barriers to such sharing and ways of overcoming these barriers. It was one of the first e-learning projects to investigate the role and importance of metadata vocabularies and metadata generation in resource sharing. SeSDL also identified the "not-invented-here" barrier, and potential problems with IPR when sharing between institutions.⁸⁰ SeSDL's original team continue to build on lessons learned (includes Lorna Campbell, Charles Duncan, Sarah Currier, Ian McLaren, Eddie Clarke), but were not funded onwards as a service.

HLSI was a regional (Yorkshire) initiative, funded to support sharing of learning materials between HE, FE and industry. This project also looked at the role of metadata generation, and was one of the first to conclude that leaving academics to create all the metadata for resources was counter-productive; poor-quality metadata resulted, and it was a barrier to academics wanting to share. It eventually moved to service status, known as **YHLearning**. Yorkshire Forward paid for the service to be hosted on a server run by a small local company which later folded; there does not appear to have been any attempt to fund other central support around the repository.

4.3 Good Intentions: Growing and Changing

Two repositories (Jorum and IRISS LX) which began as pilot projects in the early years of this decade (2002 and 2004 respectively) live on today as a JISC 'service in development' and as a service; both began with the same ideals and similar business models; both have had to adapt to

75 Scottish electronic Staff Development Library: <http://www.sesdl.scotcit.ac.uk> – early learning object repository project (2000-2002) - website no longer available.

76 Pilot project, 2002-2004: is now the Jorum Service in development: <http://www.jorum.ac.uk/>

77 High Level Skills for Industry: <http://www.hlsi.org> – early learning object repository project - website no longer available but some research outputs can still be found. Became <http://www.yhlearning.org.uk/> - also no longer a working URL.

78 Pilot project, 2004-2005: became the SIESWE Learning Exchange service, now known as the IRISS Learning Exchange: <http://www.iriss.ac.uk/learnx/>

79 Campbell, L. & Littlejohn, A. (2002). Two approaches to enable the sharing and reuse of resources across institutions. In P. Barker & S. Rebelsky (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2002* (pp. 1144-1145). Chesapeake, VA: AACE. http://editlib.org/index.cfm?fuseaction=Reader.ViewAbstract&paper_id=9996

80 Campbell, Lorna M. et al (2001) *Share and share alike: Encouraging the reuse of academic resources through the Scottish electronic staff development library* ALT-J, Volume 9, Issue 2 2001, pages 28 - 38

current circumstances, and both are moving to an open, community-based model to ensure that their support for sharing continues and grows.

These initiatives started as pilot repository services, centrally funded, with central management of both the repository, and staff and community development around the repository. Both hoped initially to provide academics with access to high-quality publicly-funded e-learning materials; IRISS in its early guise as Stòr Cùram disbursed such funding and provided central support in creation of materials, as well as identifying existing content for inclusion. One of Jorum's key remits was to provide a place to store, preserve and share materials funded by JISC and other funding bodies in UK HE and FE. Both projects also hoped to become a site for teachers to share their own self-created materials, and to re-purpose materials created by others. However, barrier after barrier asserted itself; in both cases it was largely the demands of meeting IPR concerns of funders and institutions that led to repositories sitting behind a wall of registered access, and, particularly in the case of Jorum, requiring institutions to sign up to restrictive licenses, at a time when community licensing ideals, and environments allowing easy sharing such as Flickr, were just starting to capture people's imagination in the wider Web.

Two services that started during the same period as the above projects, with the aim of sharing curriculum design and learning materials across institutions using an institutional subscription-based model, were the international, HE-based, subject-discipline repositories IVIMEDS (2002) and IVINURS (2004). Of these two, sadly, IVINURS folded earlier this year due to failure to meet revenue targets. When IVINURS started, it was able to achieve buy-in from a number of nursing schools internationally; however, within a couple of years, nursing schools in the UK and the US were facing a serious need to tighten their budgets. Added to this pressure was the sheer complexity of international collaboration. Cross-cultural issues caused hold-ups in decision-making and getting necessary input from partners. There are certainly lessons to be learned from IVINURS experience; it is likely a primary case study in the type of problems outlined by Scott Leslie in his blog post on sharing⁸¹.

IVIMEDS survives and, like IRISS and Jorum, is in a transitional phase, and is adapting its business model to overcome lower uptake than anticipated. This new model recognises that members have different levels of expertise and underlying infrastructures affecting their capacity to develop high quality content. The revised model will still operate as a membership model, where each member has voting rights (and a say in future development) with the funds supporting a well managed core service and being distributed to other members through a bidding mechanism. This ensures that those institutions with the capacity to develop content gain the extra resources needed to support this and that all member institutions benefit from this. Future options may include tiered membership fees to acknowledge the wide range of institutional readiness to develop content. The membership fee entitles members to a strong CoP and again offers much more than just access to and opportunities to share learning resources.

4.4 Reality Bites: Current Working Business Models

Most of the services we investigated are experiencing a time of transition as a result of the changing landscape, lessons learned and feedback from both users and contributors of learning resources. Many of the services we looked at are actually in transition and may be operating several models as they move forwards. There are some common themes emerging:

- Many of the models are concerned with sustainability and are actively investigating alternative funding models.
- There is a significant move towards open approaches (including use of open licensing models like CC) but also a general acknowledgement that it is important to give depositors/sharers choice about who they want to share with as this encourages understanding about ownership and encourages confidence and trust.

81 <http://www.edtechpost.ca/wordpress/2008/11/08/just-share-already/>

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- The CoP approach has proved to be effective, particularly when this utilises existing communities, and when these communities are offered services around the content that may be of higher value to the participants than the materials themselves. Collaboration is seen as a significant factor to support longer term sustainability.
- All of the models have a variety of intentions reflecting the complexity of the disparate stakeholder groups.

4.5 Future Visions

While it is apparent that the techno-literate, technophile academics and students have access to many freely available Web services and tools for sharing, and in fact are sharing with peers informally, the question of appropriate, useful and sustainable business models for institutions and funders wishing to support sharing of learning resources (including sharing of pedagogical practice) is still relevant. The drivers of cost-efficiency, resource management and enhancement of teaching and learning remain as highlighted in Sir Ron Cooke's recent report⁸².

The current trend towards providing open access to educational resources via the Web is one relevant issue, but it does not provide an entire business model for institutions with a range of resource types to manage according to a range of drivers. It is also clear that the element of choice in an increasingly personalised world will be important as teachers and learners will require a range of options in how they make their self-created materials available, and to whom.

Table 1 in Appendix 3 attempts to summarise non-sensitive information taken from the templates.

5 Subject-based sharing models

5.1 Introduction

Several surveys have indicated that most sharing has been shown to occur either with departmental colleagues (CD-LOR⁸³, WM-Share⁸⁴ and RepoMMan⁸⁵) or through subject-based repositories (Rights and Rewards survey⁸⁶), so it is interesting to consider subject-based sharing models. It could be argued that subject-based sharing occurs across all of the models we have investigated and it is important to acknowledge that the benefits of subject-based sharing are apparent across these models.

The WM-Share survey of sharing practice in 2006 found that 19.2% of respondents said they didn't share, 74.6% shared within their department, 10.8% shared with a distributed teaching team, and 8.5% said they shared with subject specialists outside their institution. This illustrates the different aspects to subject-based sharing which are likely to affect the models that people use. Use of a closed institutional repository or VLE, for example, could both support inter departmental and institutional sharing but would not support sharing with subject specialists in the UK or other countries.

This highlights one of the dilemmas for academics in deciding where to deposit materials. They may actually have several different places where they *could* deposit and they may have several different drivers to deposit, ranging from the need to make content available to students, the need to preserve their content, the need to share content with co-tutors, an edict from the institution to deposit in a VLE or repository, or a need to deposit in a national service to comply with some external funding conditions. Given that to fulfil these needs an academic may have to deposit into several systems it is hardly surprising that there is a reluctance to share for altruistic reasons. The increasing opportunities presented by open and social networking services are likely to prove rather tempting as these can make the resources available to all of the above stakeholder groups in one deposit. This is an important issue for providers of repository services to consider when marketing services to academic staff.

82 Cooke, R (2008) *On-line Innovation in Higher Education*, DIUS http://www.dius.gov.uk/policy/world_leader_e-learning.html

83 http://www.academy.gcal.ac.uk/cd-lor/CDLORdeliverable7_PRMSreport.pdf

84 <http://www2.worc.ac.uk/wm-share/>

85 http://www.hull.ac.uk/esig/repomman/downloads/R-D3-research_survey_data_11.pdf

86 <http://rightsandrewards.lboro.ac.uk/index.php?action=view&id=24&module=resourcesmodule&src=@random43cbae8b0d0ad>

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As already discussed cultural issues and traditions have an important impact on sharing. Some subject disciplines have long standing sharing traditions and have sought to develop mechanisms to support this. Disciplines with strong 'professional' identities and bodies often have many imperatives to share, not least if those bodies offer standards and regulations that courses have to meet, such as Medicine, Nursing, Law and Social Welfare. Shared curricula and assessment frameworks offer powerful incentives to share and several of the high profile subject specialist repositories reflect this. There is often a valid need to limit who can access resources, particularly if they contain sensitive information such as user case studies or patient information. For this reason membership services can offer the levels of trust required.

Subject-based sharing of learning and teaching resources is highly likely to occur in the context of Communities of Practice (CoP). Wenger⁸⁷ describes a Community of Practice as:

Groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.

The HE Academy Subject Centres⁸⁸ have established networks for their subject communities which offer an opportunity to share and recognise good practice and provide access to a range of resources. Several have also been developing repositories to share learning and teaching resources, including the Intute⁸⁹ materials. Examples include the Economics network⁹⁰ and the Centre for Languages, Linguistics and Area Studies⁹¹. The CoP model of sharing is increasingly being adopted by the services we examined and many of the open models take this approach very successfully. These approaches encourage ownership and trust, identified by many studies as crucial requirements for sharing. They also offer significant potential to support sustainability of services⁹². Even though individual members of a community may move away the underlying needs of the community remain to encourage the services that support them.

There have been some very interesting discussions summarised on Jyri Engeström's blog⁹³ which argue that viewing social networking as being about mapping relationships between individuals is missing the point and that individuals have relationships around some shared object, such as photographs in flickr, urls in Delicious, etc. Engeström argues that the most successful social networks are built around social objects. Clearly this has implications for teaching and learning materials and it will be interesting to see how well the new Cloudworks⁹⁴ initiative from the Open University progresses as it is adopting this approach in relation to learning designs.

5.2 Subject-based sharing models

We examined several models that could be described as subject based repositories, such as IVIMEDS, IVINURS, IRISS LX, CELLS and others that take a CoP approach which often includes a subject or curriculum based approach such as SURF WBL and NDLR. The open, national and institutional models also serve to support sharing at a subject-discipline level. The informal sharing models also feature significantly for this type of sharing. As discussed in section 1.1 the type of sharing models which develop from subject networks and CoP models have 'exchange' as an inherent concept.

All of these models cover a broad range of funding approaches, and access /deposit policies depending on the cultures within their subject discipline. What they all attempt to do is respond to the needs of specific subject-discipline or curricula based communities. All of them are committed to a broader vision of supporting the communities with more than just content and understand the inherent added value of CoP approach. The NDLR model is an interesting approach in providing a national repository through the CoP model. Many of the core service activities are committed to supporting the CoPs through support, training, providing spaces and supporting them during early

87 <http://www.ewenger.com/theory/>

88 <http://www.heacademy.ac.uk/ourwork/networks/subjectcentres>

89 <http://www.intute.ac.uk/>

90 <http://www.economicsnetwork.ac.uk/>

91 <http://www.llas.ac.uk/>

92 Downes, S. *Models for Sustainable Open Educational Resources* in Interdisciplinary Journal of Knowledge and Learning Objects 3 29-44 February 27, 2007. <http://www.downes.ca/cgi-bin/page.cgi?post=33401>

93 http://www.zengestrom.com/blog/2005/04/why_some_social.html

94 <http://cloudworks.open.ac.uk/>

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phases. A strength of this model is that each CoP has their own intentions – sometimes sharing/exchanging existing resources and sometimes coming together to develop new resources. This service has just received confirmation of continued funding and the evaluation report, to be published in February 2009, is expected to show evidence of changes to sharing behaviour through this approach. **It is suggested that these findings will be of significant value to the UK community.**

Table 1 in Appendix 3 illustrates all of the models we examined and highlights the subject-based sharing and CoP models in yellow.

5.3 Business cases for subject sharing

The business cases for adopting subject-based or CoP models should not be seen as something separate to any business case for developing high quality learning and teaching resources. What these models offer is added value to individuals who support and facilitate learning and teaching, and for teachers in particular. The following table is an excerpt from the generic business cases table and highlights the benefits of both a subject-based and CoP approach.

General benefits to global community	CoP	Subject-based
Supporting subject-discipline communities to share	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Encourages innovation and experimentation	SIGNIFICANT IMPACT	SOME IMPACT
Shares expertise and resources between developed and developing countries	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports re-use and re-purposing	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports community input to metadata through tagging, notes, reviews	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS
Supports effective retrieval through professionally created metadata	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Ensures trust through appropriate licensing	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports continued devt. of standards and interoperability	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports continued devt. of tools to support sharing and exchange	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports the sharing and re-use of individual assets	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports the sharing and re-use of complex learning resources	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Helps to develop critical mass of materials in particular subject areas	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports ease of access through search engines such as Google	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

Benefits for national community	CoP	Subject-based
Cost efficiencies	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Decrease in duplication	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports cross-institutional sharing	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Provides access to non educational institutional bodies such as employers, professional bodies, trade unions, etc	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports shared curricula	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Provides evidence of the provenance of learning materials	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

Good intentions: improving the evidence base in support of sharing learning materials

Supports discovery of most used/highest quality resources	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports broad vision of sharing across UK HE	SOME IMPACT	SOME IMPACT
Supports sustained long-term sharing	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Promotes the concept of lifelong learning	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports the notion that educational institutions should leverage taxpayers' money by allowing free sharing and reuse of resources	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Mitigates the risk of doing nothing in a rapidly changing environment	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Mitigates cost of keeping resources closed	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

Benefits for educational institutions	CoP	Subject-based
Maintaining & building on Institutional reputation globally	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Maintaining & building on Institutional reputation nationally	SOME IMPACT	SOME IMPACT
Attracting new staff and students to institution - recruitment tool for students and prospective employer partners		
Increased transparency and quality of learning materials	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports sharing across/between departments within institutions and interdisciplinary cross-fertilisation	SOME IMPACT	SOME IMPACT
Shares expertise efficiently within institutions		
Encourages high quality learning & teaching resources	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports modular course development	SOME IMPACT	SIGNIFICANT IMPACT
Supports storage, management, preservation, attribution and retrieval of student content		
Easily incorporated with institutionally owned technologies	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports the altruistic notion that sharing knowledge is in line with academic traditions and a good thing to do	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Likely to encourage review of curriculum, pedagogy and assessment.	SOME IMPACT	SOME IMPACT
Supports preservation of learning resources	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Facilitates presentation of resources for accreditation bodies	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Enhancing connections with external stakeholders by making resources visible	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

Benefits for those supporting/facilitating learning	CoP	Subject-based
Increased personal recognition	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports sharing of knowledge and teaching practice	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Encourages improvement in teaching practice	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports attribution	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports immediate one off instances of sharing	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT

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Offers one stop access point for staff	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Encourages multidisciplinary collaboration and sharing	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports CPD and offers evidence of this	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

Benefits for learners	CoP	Subject-based
Easy and free access to learning materials for learners	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Increased access options for students enrolled on courses (particularly remote students)	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports collaborative learning	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports development of student content within and outside formal learning activities	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Easily accessed through student-owned technologies	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Increased access for non-traditional learners (widening participation)	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Likely to encourage self-regulated and independent learning	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Likely to increase demand for flexible learning opportunities	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Likely to increase the demand for assessment and recognition of competences gained outside formal learning settings	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Likely to encourage peer support, mentorship and ambassadorial programmes	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Evidencing skills development/recording assessment and feedback	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

6 Open sharing models

6.1 Introduction

Open Educational Resources (OERs) and the Open movement generally have a very high profile throughout the world signalling the growing trend toward openness for teaching and learning materials. The following broad definition of OERs seems to be generally accepted by the community:

*Open Education Resources (OER) are teaching and learning materials that are freely available online for everyone to use, whether you are an instructor, student, or self-learner. Examples of OER include: full courses, course modules, syllabi, lectures, homework assignments, quizzes, lab and classroom activities, pedagogical materials, games, simulations, and many more resources contained in digital media collections from around the world.*⁹⁵

It is timely to consider the various models that have developed to support access to and sharing of OERs, as many of those featured in this report have reached a critical point in their lifecycle as issues of longer term sustainability have become a major focus. The sheer amount of reading material relating to OERs has resulted in some challenging desk research, but this has been aided by the recent publication of some key documents. These offer an up to date overview of the OER landscape⁹⁶, an article on sustainability of OERs, using the UK OpenLearn model⁹⁷ and a set of

95 <http://www.oercommons.org/>

96 Yuan, Li et al (2008) *Open Educational Resources – Opportunities and Challenges for Higher Education*, CETIS http://wiki.cetis.ac.uk/images/0/0b/OER_Briefing_Paper.pdf

97 Lane, Andy. *Reflections on sustaining Open Educational Resources: an institutional case study*, eLearning Papers n° 10 (2008) <http://www.elearningeuropa.info/files/media/media16677.pdf>

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comprehensive descriptions and outcomes of open initiatives from around the globe⁹⁸. The MIT Press eBook, in particular, provides a wide range of perspectives of Open Technology, Open Content, and Open Knowledge.

A significant source of information has been the vibrant UNESCO Community of Interest on Open Educational Resources⁹⁹. This community offered the opportunity to contribute and join wide ranging discussions about issues around OERs and the services that have been developed to support access to high quality resources. The community wiki is a rich source of information, including a growing collection of case studies and some very useful and accessible stories. The associated mailing list is also very active and informative. A highly practical output is the toolkit which offers check lists and key questions for new OER projects to consider¹⁰⁰.

Also of note is the OLCOS Roadmap 2012¹⁰¹, which aims to inform and support a widespread transformation in education and lifelong learning for the knowledge economy and society through open educational practice. Although OERs are seen as an important element of this goal it is acknowledged that significant change is required to move from the dominant teacher centred knowledge transfer approach to one which supports teachers and learners to explore, construct and communicate. OERs are, therefore seen as an important part of a wider landscape and it is encouraging that this holistic approach is driving much of the work within the OER community.

The roadmapping work aims to support this transformation by offering policies, frameworks and business models for institutions, examining issues around open access and open content repositories and supporting 'laboratories' of open educational practice and resources. The report offers a range of recommendations for different stakeholder groups but it is worth noting the three most critical inhibiting factors affecting the success of the OER movement.

'In order to see researchers and educators excel in OER, academic and educational institutions will need to implement appropriate mechanisms of recognition and reward.

Business models in OER will remain tricky. The right mix of income streams must be found, and there will be growing competition for scarce funding resources.

Regarding educational repositories at present there exists little experience in how to effectively support communities of practice, which is of critical importance if OER initiatives want to grow based on user contributions.'

It is interesting to note that these factors are just as valid for services offering more selective (not globally open) access.

Another important report worthy of note for this study is the OECD 'Giving knowledge for free' report¹⁰² which addresses managers of higher education institutions as well as strategists and decision makers on international, national and intermediate level. The report provides a comprehensive overview of OERs and the challenges it poses for higher education. It examines reasons for individuals and institutions to share resources for free, and looks at copyright issues, sustainability and business models as well as policy implications. The report advises governments to take a 'holistic approach' to ensure that the contribution made by OERs is just one of the methods contributing to a diversified supply of learning resources, and recommends that they study how OERs can be used efficiently to meet some of the demand for increased lifelong learning. Advice to managers of higher education institutions includes the need to have an information technology strategy which includes the way the institution will manage the opportunities and threats presented by the OER movement, and it suggests strategies to embrace the opportunities which, not surprisingly, focus significantly on supporting staff to adapt to the impending changes.

98 Iiyoshi, T. and Vijay Kumar, M.S. *Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge*, 2008 <http://mitpress.mit.edu/catalog/item/default.asp?type=2&tid=11309&mode=toc>

99 http://oerwiki.iiep-unesco.org/index.php?title=Main_Page

100 http://oerwiki.iiep-unesco.org/index.php?title=UNESCO_OER_Toolkit

101 <http://www.olcos.org/english/roadmap/>

102 OECD (2007) *Giving Knowledge for Free: the emergence of open educational resources*
http://www.oecd.org/document/41/0,3343,en_2649_35845581_38659497_1_1_1_1.00.html

6.2 Open sharing models

As originally intended we examined some key open models in detail using the business model template - OpenLearn, JORUMOpen and MIT OCW model. However it has also been useful to look in a less detailed way at the range of open models currently being used and adapted worldwide. The JISC CETIS report¹⁰³ describes a more comprehensive selection of initiatives and tools but the examples included in *table 2* offer a range of models that illustrate some of the most significant approaches to supporting the sharing and re-use of learning materials. The models range from top-down National and Institutional approaches to bottom-up Community of Practice approaches. Funding mechanisms range from public funding to sponsorship/donations.

Table 2 in Appendix 4 illustrates the range of different open sharing models.

A few of these initiatives have been operating for several years so we have started to see a picture emerging around use, but many reports and articles identify a significant lack of information about how these learning resources are actually being used and by whom. Whilst the primary intent of many of the services is to offer high quality open resources to both educators and students evidence indicates that learners are the group most likely to benefit from these initiatives on a large scale. Most of the early services have focussed on English language materials and there is currently a rise in activity to translate some of these and develop non-English speaking collections, which is likely to fulfil some of the original visions of increasing access to all learners.

The OER Community have identified 'lack of awareness of OERs' as one of the main areas of activity for the community, and this is particularly pertinent given the huge amount of investment made so far across the developed world. Despite the millions of pounds spent and thousands of resources available – we still do not have convincing evidence of their impact. Measuring numbers of downloads does not really tell us enough although several services have been able to identify which categories of users have been downloading resources¹⁰⁴. Many of the CoP models and those based on web 2.0 technologies have built in review mechanisms so that people can comment on the value of the resources and indicate how they have been used. This type of approach is expected to reveal/identify the high quality resources but does raise significant questions about the true value of the materials. As discussed elsewhere in this report the services around the resources and the value these add to the resources is often perceived as more important than the resources themselves. The MERLOT service has been operating for some time and focuses on the sharing of teaching and learning practice as key to sustaining and supporting the effective use of the resources.

The OER community must shape a strategy for continuing success: Design effective learning experiences using open educational resources, and sustain openness in the community and collection of resources. Without adaptation and embedded effective learning designs, the OER community will not be able to transform the teaching and learning needed to achieve educational outcomes. Without collaboration to provide sustaining resources and support, the OER community will not be able to achieve the pervasive use of online educational resources needed to transform the education of the world's population.¹⁰⁵

In the UK we are about to benefit from a new funding stream entitled 'Opening up resources for learning'¹⁰⁶ to support the development of a critical mass of open learning and teaching resources. The timing of this enables us to take advantage of the mass of existing knowledge and experience from around the world. We should be able to adopt/adapt/reuse some of the models applied elsewhere to make the resources accessible, but it is crucial for us to take the advice offered in supporting our institutions to understand how OERs and OCW are changing the landscape, and how they need to adapt both policy and practice to support their staff through the process. Enabling institutions to operate effectively in this landscape should be a significant aspect of the

103 Yuan, Li et al (2008) *Open Educational Resources – Opportunities and Challenges for Higher Education*, CETIS http://wiki.cetis.ac.uk/images/0/0b/OER_Briefing_Paper.pdf

104 MIT 2005 evaluation report <http://ocw.mit.edu/index.html>

105 Carey, T. and Hanley, G.L. *Extending the Impact of Open Educational Resources through Alignment with Pedagogical Content Knowledge and Institutional Strategy: Lessons Learned from the MERLOT Community Experience*. Chapter 12 in Iiyoshi, T. and Vijay Kumar, M.S. *Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge*, 2008 <http://mitpress.mit.edu/catalog/item/default.asp?type=2&tid=11309&mode=toc>

106 <http://www.hefce.ac.uk/news/hefce/2008/os.htm>

pilot projects. It is also important to acknowledge that the UK has developed an impressive amount of knowledge and experience of developing, managing and enabling discovery of content to support learning and teaching through both the JISC Repositories Programme and the JISC eLearning Programme. Many of the tools, resources and knowledge that have resulted from this work will be able to inform this new stream of activities.

There are lessons to be learned from the ongoing RePRODUCE Programme. These projects appear to have not yet embraced much of the open content that is available and it will be interesting to see if any of them do so by the end of the programme in 2009 - this is a question suggested for their evaluation plans. One issue here is highly likely to be lack of knowledge of what is available and lack of time to find them. Another important issue is a lack of a critical mass of high quality UK centric materials, which is also likely to be important. The JISC CETIS report highlighted the crucial issue of cultural-specific approaches to teaching and learning and much of the existing OERs and OCW have their own cultural context embedded. So whilst it can be educational for people to see that context it may act as a significant inhibitor to re-use in other countries.

Whilst the altruistic intent of making resources accessible to learners around the world is, clearly, valid and admirable, it is important to acknowledge that there will be a hugely significant value nationally to develop culturally appropriate resources (and services) to support the lifelong learning agenda as highlighted in the recent Cooke Report. It is also important not to divorce OERs and OCWs from the wider sharing landscape as it is only one part of the bigger picture.

6.3 Sustainability and open sharing models

Sustainability appears to be one of the most significant issues for the OER community following the injection of huge amounts of money to develop the critical mass of content. Issues around sustainability of the development of resources and the ongoing use/re-use are crucial to both business models and the business cases. Atkins et al. (2007)¹⁰⁷ identified a number of different approaches to sustainability including the need to gain institutional wide engagement to achieve buy-in, ensuring that OERs are an integral part of the courses, not distinct and separate elements, membership-based consortia to share costs and expertise, student created OERs, and several of the approaches used in the CoP model such as voluntary contributions, reviews, and sharing of practice. The CETIS report found that:

There is growing interest in community-based approaches to produce content and promote sharing and use of resources. To make OER initiatives work and keep them for the long run, it is important to first gain and maintain a critical mass of active, engaged users, increase usability and improve quality of the resources created. The “community” offers possibilities for rapid diffusion and a strong community influences user behaviour and increases the likelihood that users will come back to the repository. OER should not only pay attention to the “product” but on understanding what its user community wants and on improving the OER’s value for various user communities.

There are also arguments for the need to continue to publicly fund OERs as 'Commonweal goods'. Koohang and Harman¹⁰⁸ argue that

we can start with a basic premise: knowledge and learning (and the products associated with them) are commonweal goods. Tacit acceptance of this premise is demonstrated by the existence of private, not-for-profit and publicly supported educational institutions of all types at all levels.

The same authors also suggest that sustainability is supported more by taking an OCW approach rather than just focussing on smaller assets. Both models have been widely taken up and appear to have their place. This relates to the familiar argument around embedding context within content, either in the way it is framed/packaged or developed. This also has an impact on re-use, as summarised by Wiley et al.¹⁰⁹ that when re-usability goes up, contextualisation goes down, and

107 Atkins, D, E.; Brown, J, S. and Hammond, A, L. (2007), A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges and New Opportunities <http://tinyurl.com/6296bd>

108 Koohang, A. & Harman, K. (2007) *Advancing Sustainability of Open Educational Resources*, Issues in Informing Science and Information Technology Volume 4, 2007, <http://proceedings.informingscience.org/InSITE2007/ISITv4p535-544Kooh275.pdf>

109 Wiley et al. (2006?) *A reformulation of the issue of learning object granularity and its implications for the design of learning objects* <http://reusability.org/granularity.pdf>

vice versa. This has significant impact on learning design choices and needs to be considered in relation to the sustainability of the resources themselves.

Also of interest is the recent article by Andy Lane¹¹⁰ from the Open University's OpenLearn initiative which focuses specifically on sustainability, and takes a long term view:

We feel confident that in due course the cost savings created by new and improved working methods for the development of educational materials and the promotion of courses and services, as well as the additional revenue derived from extra student enrolments and new or expanded fee paying services to existing and new clients will offset many of the basic costs of running OpenLearn (and related ventures) in the future.

This argument is clearly of interest to national funders which have generally seen sharing and re-use as having massive potential for cost efficiencies. The OpenLearn model's success is the outcome of many factors but one of the most significant of these is the huge experience of developing content for distance learners and tutors. The institutional infrastructure supports this 'industrial product process' approach and is supported by highly experienced and organised teams of people. So whilst the OpenLearn model is not immediately adaptable to UK HE institutions there are many lessons to be learned from the OU experience. The current JISC POCKET project led by the University of Derby with the Open University, Bolton and Exeter Universities, aims to take the OpenLearn approach to other HE Institutions.

6.4 Business Case for Open Sharing

The business case for adopting an open-sharing approach should not be seen as something separate to the broader business case for developing high quality learning and teaching resources. What this model offers is added value and should be closely linked to the intentions of the government, institutions or individuals. In fact one of the most important aspects to consider is how the adoption of some aspects of an open model can enhance existing provision and benefits.

BENEFITS OF OPEN-SHARING MODEL	
General benefits for all	
Supporting subject-discipline communities to share	SIGNIFICANT IMPACT
Encourages innovation and experimentation	SIGNIFICANT IMPACT
Shares expertise and resources between developed and developing countries	SIGNIFICANT IMPACT
Supports re-use and re-purposing	SOME IMPACT
Supports community input to metadata through tagging, notes, reviews	SOME IMPACT
Supports effective retrieval through professionally created metadata	POSSIBLE WITH RIGHT CONDITIONS
Ensures trust through appropriate licensing	SOME IMPACT
Supports continued development of standards and interoperability	SOME IMPACT
Supports continued development of tools to support sharing and exchange	SIGNIFICANT IMPACT
Supports the sharing and re-use of individual assets	SIGNIFICANT IMPACT
Supports the sharing and re-use of complex learning resources	POSSIBLE WITH RIGHT CONDITIONS
Helps to develop critical mass of materials in particular subject areas	SIGNIFICANT IMPACT
Supports ease of access through search engines such as Google	SIGNIFICANT IMPACT
Benefits for national community	
Cost efficiencies	SIGNIFICANT IMPACT
Decrease in duplication	SIGNIFICANT IMPACT

110 Lane, A. *Reflections on sustaining Open Educational Resources: an institutional case study*, eLearning Papers, www.elearningpapers.eu N10 September 2008, <http://www.elearningeuropa.info/files/media/media16677.pdf>

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Supports cross-institutional sharing	SIGNIFICANT IMPACT
Provides access to non educational institutional bodies such as employers, professional bodies, trade unions, etc	SIGNIFICANT IMPACT
Supports shared curricula	SOME IMPACT
Provides evidence of the provenance of learning materials	POSSIBLE WITH RIGHT CONDITIONS
Supports discovery of most used/highest quality resources	SIGNIFICANT IMPACT
Supports broad vision of sharing across UK HE	SIGNIFICANT IMPACT
Supports sustained long-term sharing	POSSIBLE WITH RIGHT CONDITIONS
Promotes the concept of lifelong learning	SIGNIFICANT IMPACT
Supports the notion that educational institutions should leverage taxpayers' money by allowing free sharing and reuse of resources	SIGNIFICANT IMPACT
Mitigates the risk of doing nothing in a rapidly changing environment	SIGNIFICANT IMPACT
Mitigates cost of keeping resources closed	SIGNIFICANT IMPACT
Benefits for educational institutions	
Maintaining & building on Institutional reputation globally	SIGNIFICANT IMPACT
Maintaining & building on Institutional reputation nationally	SOME IMPACT
Attracting new staff and students to institution – recruitment tool for students and prospective employer partners	SIGNIFICANT IMPACT
Increased transparency and quality of learning materials	SIGNIFICANT IMPACT
Supports sharing across/between departments within institutions and interdisciplinary cross-fertilisation	SOME IMPACT
Shares expertise efficiently within institutions	SIGNIFICANT IMPACT
Encourages high quality learning & teaching resources	SIGNIFICANT IMPACT
Supports modular course development	SIGNIFICANT IMPACT
Supports storage, management, preservation, attribution and retrieval of student content	POSSIBLE WITH RIGHT CONDITIONS
Easily incorporated with institutionally owned technologies	POSSIBLE WITH RIGHT CONDITIONS
Supports the altruistic notion that sharing knowledge is in line with academic traditions and a good thing to do	SIGNIFICANT IMPACT
Likely to encourage review of curriculum, pedagogy and assessment.	SIGNIFICANT IMPACT
Supports preservation of learning resources	POSSIBLE WITH RIGHT CONDITIONS
Facilitates presentation of resources for accreditation bodies	POSSIBLE WITH RIGHT CONDITIONS
Enhancing connection with external stakeholders by making resources visible	SIGNIFICANT IMPACT
Benefits for those supporting/facilitating learning	
Increased personal recognition	SIGNIFICANT IMPACT
Supports sharing of knowledge and teaching practice	POSSIBLE WITH RIGHT CONDITIONS
Encourages improvement in teaching practice	SIGNIFICANT IMPACT
Supports attribution	SIGNIFICANT IMPACT

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Supports immediate one off instances of sharing	SIGNIFICANT IMPACT
Offers one stop access point for staff	POSSIBLE WITH RIGHT CONDITIONS
Encourages multidisciplinary collaboration and sharing	SIGNIFICANT IMPACT
Supports CPD and offers evidence of this	SIGNIFICANT IMPACT
Benefits for learners	
Easy and free access to learning materials for learners	SIGNIFICANT IMPACT
Increased access options for students enrolled on courses (particularly remote students)	SIGNIFICANT IMPACT
Supports collaborative learning	POSSIBLE WITH RIGHT CONDITIONS
Supports development of student content within and outside formal learning activities	POSSIBLE WITH RIGHT CONDITIONS
Easily accessed through student-owned technologies	SIGNIFICANT IMPACT
Increased access for non-traditional learners (widening participation)	SIGNIFICANT IMPACT
Likely to encourage self-regulated and independent learning	SIGNIFICANT IMPACT
Likely to increase demand for flexible learning opportunities	SIGNIFICANT IMPACT
Likely to increase the demand for assessment and recognition of competences gained outside formal learning settings	SIGNIFICANT IMPACT
Likely to encourage peer support, mentorship and ambassadorial programmes	SIGNIFICANT IMPACT
Evidencing skills development/recording assessment and feedback	POSSIBLE WITH RIGHT CONDITIONS

6.5 Summary of open sharing models

Intent varies from model to model, and whilst most models have multiple intentions the most common vision/intent for OERs is to make content more accessible for learners. Whilst there is sometimes an articulated intent to encourage academics to share learning materials this has not always been borne out in evaluations. It also cannot be assumed that making materials open and accessible will encourage sharing between academics. It was interesting to read a very candid story about the lessons learned by the BC campus OER in Canada¹¹¹. They developed a specific licence which allowed depositors to choose the level of sharing they desired (within Canada or open to the world through CC)

In 2003 when we engaged legal counsel to create the BC Commons license we did so from a historical context of "learning objects" which was a research paradigm at the time. The focus was on faculty and providing them with reusable resources. As a result our BC Commons license was written specifically to allow sharing with educators across the BC public post secondary system. We did not explicitly include students though they obviously are the recipients of OER resources used by faculty in delivery of a course. In the interim years it has been interesting to note that most OER report that the majority of usage is coming from students not educators. In hindsight our OER initiative could have greater impact if the BC Commons license allowed for student access.

Most of the models highlight a growing acknowledgement of the need to build and support open and sustainable communities to share practice and resources. Indeed such communities are often the key to sustaining the service, whichever model is adopted. This is the type of model most likely to encourage sharing between teachers as well as learners.

The growing OER community is taking collaborative approaches to tackling the ongoing challenges of raising awareness, licensing and trust issues, and standards and technologies. The challenge for the UK now is to ensure that our HE institutions are enabled to create policies, practices and

¹¹¹ http://oerwiki.iiep-unesco.org/index.php?title=OER_stories:_BCcampus

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support their staff to accelerate the transformations required to contribute and benefit from this global movement. It is also vital to ensure that we capture the real picture of use and re-use of such services and collections to inform future OER programmes. The OU is currently focussing on this and their mechanisms may be of interest to the wider UK community.

The issue of raising awareness is significant. It cannot be assumed that educators are aware of the benefits of global sharing. The aforementioned BC campus example again illustrates this. When offered with a choice of licence to apply to their OERs at the point of deposit 90% chose the BC Commons licence rather than the CC licence

We initially anticipated that when offered a choice many developers would choose to be part of a global OER movement. This has not turned out to be the case. When offered a choice over 90% of our developers are going with BC Commons. We believe this is significant and that there are definite benefits to proving out a sharing model locally before going global. However, it means that wide open access to the OER for all is curtailed and the extent of reuse and modification is limited to a smaller local base.

This issue also arose when looking at some institutional models and is a fundamental issue for teachers and their attitudes, fears and the barriers to sharing. Offering teachers a choice of how they share and who they share with is important in engaging initial buy-in. Once their confidence grows, and if supported by a trusted CoP then they may widen their future sharing choices.

7 Business cases

The business case package of this study is not included within the body of this report but part of it is presented as a series of tables in **Appendix 5**. These tables offer suggestions for which benefits are most likely from a range of approaches. The benefits of sharing are arranged into 5 sections relating to key stakeholder groups:

- General benefits of sharing for global community
- Benefits of sharing for national community
- Benefits of sharing for educational institutions
- Benefits of sharing for those supporting/facilitating learning
- Benefits of sharing for learners

Whilst several of the benefits are relevant to more than one stakeholder group each benefit is identified in only one of the sections for simplicity. As mentioned previously the table could be used as a tool to help institutional managers and staff to consider which of the benefits are important to them (at either strategic, policy, operational or practice levels). They could then use the tool to identify existing sharing mechanisms which could be enhanced and also identify new models that could best support the benefits they have identified as relevant to their own institutional context.

8 Summary

The vision of a world where teachers in HE, FE and WBL/CPD would share and re-purpose their learning materials, using the Web as a medium, with the support of interoperability standards, and repository platforms utilising those standards has been with us for many years. Despite our best efforts and good intentions we've not always moved forward as fast as we would have liked. We've encountered many barriers, several forks in the road and often had to make choices without any maps at all. We've tried to develop a few one-way systems that have caused frustration and imposed some risk averse regulations. We've witnessed a few accidents and mourned a few casualties. And now we find that after all that work and, sometimes painful, experience our world has changed. It's as if we now have access to spinners¹¹² from which we have a broader and expanded view. Many of the barriers are no longer even relevant. Some still exist (but we know them very well) and the end goal remains the same but we have a clearer picture of the many routes we can follow to get there, and also some of the shortcuts.

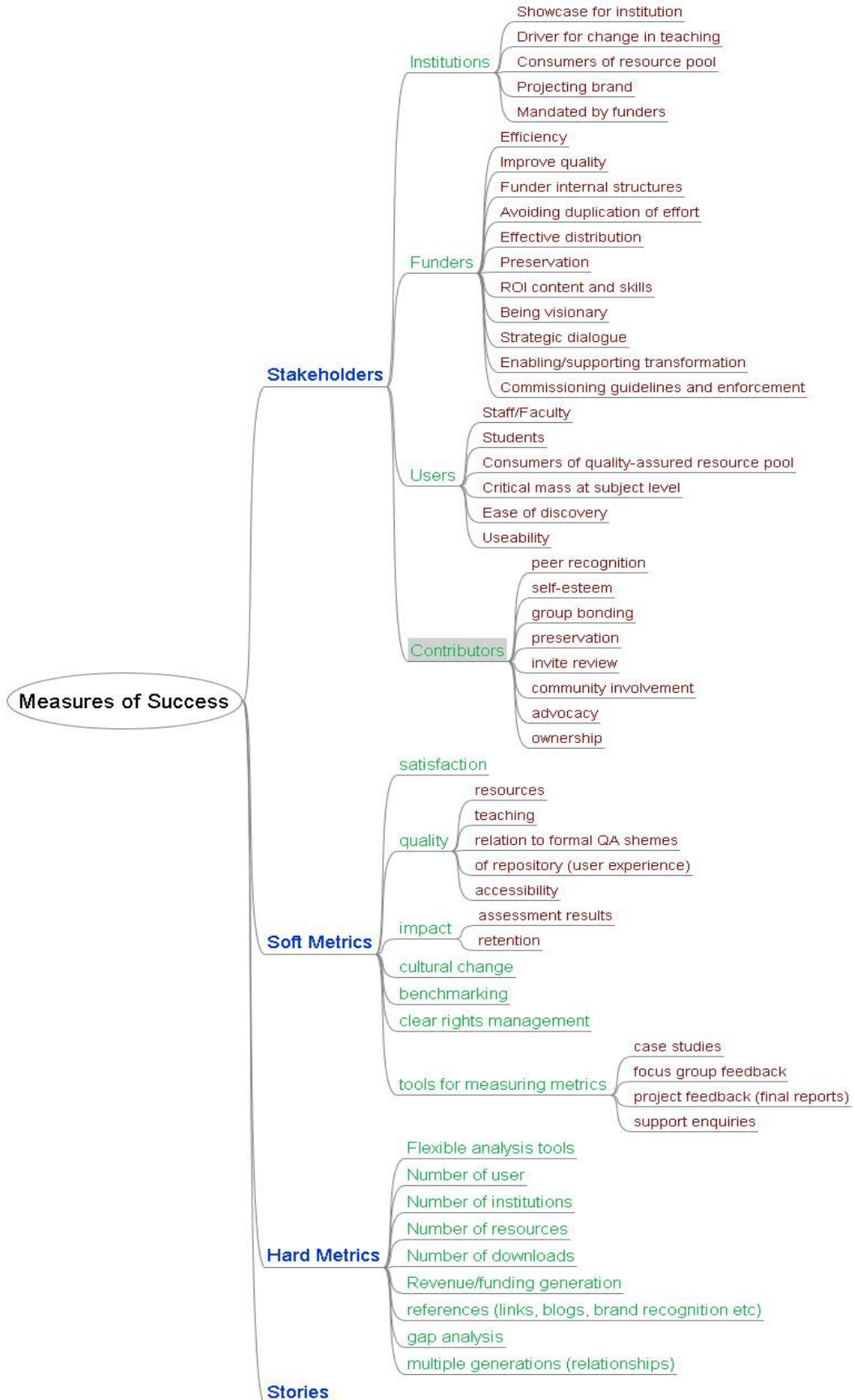
112 flying cars in the movie Bladerunner [http://en.wikipedia.org/wiki/Spinner_\(Blade_Runner\)](http://en.wikipedia.org/wiki/Spinner_(Blade_Runner))

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This may be taking the analogy a bit far but the evidence suggests that the landscape of policy, technology, and learning and teaching practice may have changed sufficiently for us to realise the vision. There are many different models of service to support sharing of learning and teaching resources and there are as many different contexts in which these need to operate. Each model has grown and adapted to the changing landscape. It is important that policy makers, funders, institutional managers, organisations concerned with learning and teaching, learners and teachers have an opportunity to engage with the benefits of sharing, and have robust mechanisms to support their sharing context. The business cases presented as part of this study go some way towards articulating the evidence that there are benefits to sharing at global, national, regional, and individual levels.

Appendix 1

Mindmap from the National Symposium of Learning Resources Repositories showing Measures of success



Appendix 2 Template - Business models for sharing learning resources

Service/Project Name:	
1. Funding model/s	Notes
1.1 Initial funding source/s: (could be a combination of these) <input type="checkbox"/> Government/Public <input type="checkbox"/> Educational Institution/s <input type="checkbox"/> Membership <input type="checkbox"/> Sponsorship <input type="checkbox"/> Contributor payment <input type="checkbox"/> Donations model <input type="checkbox"/> Endowment model <input type="checkbox"/> Other	
1.2 Current funding source/s: (could be a combination of these) <input type="checkbox"/> Government/Public <input type="checkbox"/> Educational Institution/s <input type="checkbox"/> Membership <input type="checkbox"/> Sponsorship <input type="checkbox"/> Contributor payment <input type="checkbox"/> Donations model <input type="checkbox"/> Endowment model <input type="checkbox"/> Other	
1.3 Reasons for above transitions/changes:	
1.4 Funding timescales: (how long projects/services are funded and patterns of funding: <input type="checkbox"/> One-off contributions <input type="checkbox"/> Recurrent <input type="checkbox"/> Short term <input type="checkbox"/> Long term	
1.5 Conditions of funding: (may be project specific, may be ongoing, may be other influential relationship/dependency factors)	
1.6 Critical review points:	
1.7 Funding sustainability:	
1.8 General notes on funding:	
2. Service model/s	Notes
2.1 Type of service <input type="checkbox"/> Project <input type="checkbox"/> Service <input type="checkbox"/> Project to service	
2.2 Fundamental concepts or visions: (may be a combination of these) <input type="checkbox"/> Curriculum development <input type="checkbox"/> Repository development <input type="checkbox"/> Cost efficiencies <input type="checkbox"/> Institutional strategy <input type="checkbox"/> Subject discipline requirements/gaps <input type="checkbox"/> Test-bed approaches – needing to learn about sharing/re-purposing/re-use	
2.3 Type of sharing model/s: (could be a combination of these) <input type="checkbox"/> Global sharing <input type="checkbox"/> National sharing <input type="checkbox"/> Institutional sharing <input type="checkbox"/> Departmental sharing <input type="checkbox"/> Individual sharing <ul style="list-style-type: none"> <input type="checkbox"/> within institution <input type="checkbox"/> with consortia/partnerships <input type="checkbox"/> with professional/subject discipline colleagues (UK or International) <input type="checkbox"/> Community of practice sharing <input type="checkbox"/> Profession based <input type="checkbox"/> Subject discipline based <input type="checkbox"/> Sector based (eg FE)	
2.4 Type of contributor model	

<ul style="list-style-type: none"> <input type="checkbox"/> funded project staff <input type="checkbox"/> institutional recognition (future funding) – brownie points approach 	
<p>3.4 Contributions</p> <ul style="list-style-type: none"> <input type="checkbox"/> individual assets <input type="checkbox"/> learning objects and activities <input type="checkbox"/> complete course <input type="checkbox"/> metadata <input type="checkbox"/> quality assured <input type="checkbox"/> attributed and licenced <input type="checkbox"/> can be re-purposed <input type="checkbox"/> mediated by someone 	<p>Metadata only (catalogue) or metadata added to content</p>
<p>3.5 Consumer attributes</p> <ul style="list-style-type: none"> <input type="checkbox"/> Unrestricted <input type="checkbox"/> staff in UK educational institutions <input type="checkbox"/> students in UK educational institutions <input type="checkbox"/> staff in UK HE institutions only <input type="checkbox"/> staff in UK FE institutions only <input type="checkbox"/> commercial companies <input type="checkbox"/> local communities (incl WBL, SMEs) <input type="checkbox"/> funded project staff <input type="checkbox"/> same as supplier attributes 	
<p>3.6 Range of sharing options – choices of suppliers and consumers</p> <ul style="list-style-type: none"> <input type="checkbox"/> informal within department (bottom up - serendiptous) <input type="checkbox"/> informal within subject discipline community (bottom up - serendipitous) <input type="checkbox"/> informal with wider community (ie on demand, or made available on web) <input type="checkbox"/> formal within department – VLE or repository (top down) <input type="checkbox"/> formal within specific sector through repository (top down-govt) <input type="checkbox"/> formal within UK HE and FE sector through repository (funded projects) <input type="checkbox"/> formal through shared curriculum 	
<p>3.7 Specific contributors/consumers</p> <p>Primary contributors</p> <p>Incidental contributors</p> <p>Primary consumers</p> <p>Incidental consumers</p>	
<p>3.8 Intent</p> <ul style="list-style-type: none"> <input type="checkbox"/> sharing by accident – not the primary motivation <input type="checkbox"/> individual sharing (motivated by own desire – varied reasons) <input type="checkbox"/> told to share – dept, inst, funders <input type="checkbox"/> beneficiary of others sharing 	<p>Such as – ego, altruism, economic, resourcing issues, etc.</p>

Appendix 3 Table 1 Range of business models examined for this study

	OpenLearn (OU UK) http://openlearn.open.ac.uk/	JORUM UK http://www.jorum.ac.uk/	NDLR http://www.ndlr.ie/	COLEG http://www.coleg.org.uk/coleg/69.html	IRISS LX http://www.iriss.ac.uk/learnx/	IVIMEDS http://www.ivimeds.org/	SURF WBL http://www.jisc.ac.uk/whatwedo/programmes/x41/surfwbl.aspx	CeLLS http://www.jisc.ac.uk/whatwedo/programmes/earningsfc/cells.aspx	Informal	Edshare http://www.edshare.soton.ac.uk/
Primary Intent and key principles	Self- learning materials available to educators and learners globally. Proof of concept(large scale action research) Open education for all. Peer support for learners through social software.. structured materials and sense-making software to improve learning experience	Enabling sharing and re-purposing of teachers in UK HE, FE and WBL/CPD Moving towards: Responsive user centred service. Free at point of use. Quick and easy to use. Minimal technical and legal barriers to access to both service and materials.	To support access to and provide support for the development of sharable digital learning resources in Ireland. Foster CoPs. Pilot national repository. Support devt of high quality learning materials.	Produces innovative learning materials, e-learning tools and other practical learning solutions to support Scotland's Colleges in contributing to the success of Scotland's economy and the potential of its people by being the first choice provider of learning solutions.	Publishing and sharing mechanism for organisations working in social services in Scotland To help support evidence based practice. Reward by recognition.	To support curriculum development in Medicine International not-for-profit partnership of medical schools and institutions working to develop the full potential of e-learning in medical education.	Curriculum development in WBL Practical Guide to the Resourcing and Support of WBL. Study of Policy & Organisational Implications of Resourcing & Supporting WBL in a Consortium. Focused on the pedagogic implication of the repurposing and reusing of materials Test-bed for repository approach. Cost efficiencies of sharing resources	Curriculum development in the Life Sciences. develop interactive e-learning materials for the core part of the curricula. To develop a sustainable learning community if in the life sciences in Scotland Sharing between FE/HE in Scotland	Usually individual wanting to share or exchange range of materials and practice and to widen access for learners	enabling and supporting sharing of practice, learning designs and approaches and content fundamental concept about enabling sharing within the institution
Service model	Open	National Open	National CoP	Sectoral	National Subject-discipline CoP	Subject-discipline and CoP	Regional Curriculum-based	Subject-discipline	Varied	Institutional
Funding model	Grant	Public finding	Public finding	Membership	Public funding	Membership and some public funding	Public funding	Public funding	N/A	Public funding
Sustainability	Aims to become part of established OU practice.	Move to 3 tier model to respond to demand.	Through buy-in of CoPs. Hope pilot proves value of	Long standing model with buy-in from most Scottish	Transition to national and subject-discipline-based,	Adaptation of model to acknowledge different needs	Succeeded in becoming part of established institutional	Aimed to be self sustaining but demise of IU partner which	Through individual interests and/or CoP support	Intends to be fully institutional funded and embedded.

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		Continued public funding. Investigating various models	continued public funding. Service supports CoPs through training, workshops and information.	Colleges	with the involvement of the social care agencies. Collaborations and CoP model imp.	of members at different stages of capacity. Plans to generate revenue: Sale of resources. Sale of structured programmes.	practice And further projects to broaden focus from just content http://surfwblway.bl.ogspot.com/	supplied developers affecting this Resources made available to UK FE and HE through JORUM".		
Phase/timing	2005-	2002-	2007-	1995-	2005-	2004-	2005-	2005-		2008-
Type of content	Media rich resources made available via interactive OS VLE 5400 resources by 2008 study units, subject themes and study skills.	OERs at varied levels of granularity.	Varied content depending on CoP needs and input.	Wide range of learning materials, including assessments, outputs from funded projects QA process very important	Wide range – responding to needs of community – anything by any academic. Also now have specialist agencies contributing to evidence based needs	Wide range of content types, including learning assests, LO's and virtual patient packages.	Wide range of formats to support WBL	Complex LOs	Usually single assets but wide range of formats	Wide ranging depending on what people chose to share.
Level of access	Globally open	Some closed some open	All Irish HE tertiary institutions	Limited to members	Was closed to IRISS consortia members – moving to completely open model. Much more aimed at practitioners and not just HEIs	Limited to subscriber institutions at present.	Used JORUM but had to make open to wider community in region as WBL employers need access too. Launching new service soon/now based on HIVE repository.	All materials deposited in JORUM	Varied and allows user to select mechanisms, services and systems that supports the level of access they want.	not known yet but aim to ease people into depositing and giving control over who they share with
Encourages re-use and re-purposing	Key aim of lab space area	Key aim	Key aim	Key aim	Key aim	Key aim	Key aim	Informal mechanisms have less barriers to sharing	Significant likelihood	Key aim within institution
Success factors	Production team approach to developing learning resources. Rapid development period.	Critical mass of content from funded projects with requirement to deposit. Services around content.	Currently being evaluated but supporting CoP approach seems to be very successful. Evaluation report	Buy in from FE institutions with strong sharing traditions. Knowing audience very well. Shared curriculum and	Strong CoP. High quality materials. Adapting to needs. Broadening original vision and taking	Trust within partnership. Commitment to high quality. Long planning and pilot phases. (Started in 2002)	Strong partnerships. Institutional buy-in. Common goal.	Ease of use. Lack of barriers. User controlled sources. Choice -what to share and who with.	Informality, lack of tracking (so supports a lack of transparency). Sharing with people you trust. Easiest mechanism used	As yet unknown but builds on work of DIALOG PLUS

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	Commitment to openness in tools, interoperability seen as important. Choice of CC helped speed of process.	Willingness to respond to market and change.	due end Jan 09.	assessment framework. Content just part of wider service.	broader role to support evidence based practice. Effective marketing and consultation.				so not time consuming. concern for preservation not key. Supports creativity.	
Lessons learned	Early days but research approach likely to yield significant lessons for the global community. Remixing content more likely through basic tools that non technical users use – such as word processor, rather than XML.	JORUM Open is outcome of lessons learned by JORUM 1. articulated in document - Jorum Repository Case Study: Business Models and IPR Arrangements for Adopting an Open Access Service ¹¹³	See evaluation report Jan 09.	Currently moving to more formal repository	Need to focus on wider issues around learning design and services to support teaching community	Acknowledging that not all member institutions can produce complex materials. Need to be flexible and adaptable and change model. Bigger visions (such as access for developing countries remain) but practical issues prioritised.	Access was important so had to develop own mechanisms to share with WBL bodies in region. Understanding of significance of institutional policies on driving transformational change.	Complexities and costs of developing high quality content through cross institutional consortia. Useful guides produced on content development and IPR issues	Materials get lost, no recods of use/re-use. Easy to do so people will continue doing it. Web 2.0 makes this easier	Will be evaluated as project progresses through JISC mechanisms

¹¹³ <http://www.rsp.ac.uk/repos/casestudies/pdfs/jorum.pdf>

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Appendix 4. Table 2 Open sharing models

	OpenLearn (OU UK) http://openlearn.open.ac.uk/	JORUMOpen (UK) http://www.jorum.ac.uk/	MIT OCW (US) http://ocw.mit.edu	New Zealand OER project http://oer.repositor.ac.nz/	MERLOT http://www.merlot.org/	Oer commons http://www.oercommons.org/	Connexions (Rice University) http://cnx.org/	Knowledge Hub (Mexico) http://khub.itesm.mx/	BC Campus (Canada) http://www.bccampus.ca/
Primary Intent	Self- learning materials available to educators and learners globally. Proof of concept(large scale action research)	To enable sharing in a worldwide context.	To publish all courses at MIT.	National resource. Proof of concept Courseware not just content	Network of higher education systems and leading institutions collaborating through the exchange, reuse, and adaptation of exemplary learning resources and shared teaching expertise	Open learning portal where teachers and professors can access their colleagues' course materials, share their own, and collaborate on affecting today's classrooms.	Environment for collaborative development and sharing of 're-usable scholarly content'	Multilingual hub for discovery of high quality OERs. Index to open resources selected by subject specialist Professors.	National resource – sectoral not institutional for students and educators
Underlying Principles	Open education for all. Peer support for learners through social software.. structured materials and sense-making software to improve learning experience	User centred service. Free at point of use. Quick and easy to use. Minimal technical and legal barriers to access to both service and materials.	advance knowledge and educate students in science, technology, and other areas of scholarship to best serve the world.	Quality, flexibility of use, reduce duplication	Collaboration and community sharing	to expand educational opportunities by increasing access to high-quality OERs. facilitating the creation, use, and re-use of OER, for instructors, students, and self-learners.	Encourage sharing. Encourage collaboration Smaller modules of non linear content reflects how people learn and encourages learners to find relationships between content.	Fostering knowledge transfer, and reduce education gap.	Increase courses, programs, resources and services available to students. Greater efficiency and less redundancy through collaborations across institutions
Funding model	Grant William and Flora Hewlett Foundation	Public finding (project to service)	Institutional funding and donation. Also partnerships with key institutions	Public funding macro level business model – not individual institutions	16 sponsoring institutions and 7 universities and colleges invest in supporting web site and give faculty time to input to QC. Shared governance Merlot devt. Aligned to	Produced by Institute for the Study of Knowledge Management in Education Funded by grant from William and Flora Hewlett Foundation	Institutional funding – Rice Uni. Grants William and Flora Hewlett Foundation dependent on voluntary contributions from CoP	Not sure (possibly funding from World Economic Forum	Public funding (at 6 th round of funding)

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					institutional strategies and needs.	also donations			
Sustainability	Aims to become part of established OU practice.		Institutional commitment from MIT to sustain	Expect continued public funding	community has sustained operations over the last seven years	Community buy-in continued grants?	Decentralised model dependent on CoP likely to help sustainability	As above	Continued public funding
Phase/timing	2005-	2009-	2002-	2006-	1997-	2007-	1999-	2008-	2003-
Type of content	Media rich resources made available via interactive OS VLE 5400 resources by 2008 study units, subject themes and study skills.	OERs at varied levels of granularity.	lecture notes, problem sets, syllabi, reading lists, tools and simulations as well as video and audio lectures 1800 courses	Varied granularity but courseware rather than smaller elements	Primarily school and college level OERs but with pedagogic context added through comments of staff and students. Peer reviewed. Over 16000 OERs & 8000 contributions of teaching expertise	OERs – school and college level community reviews of how used 20000 resources	Modules. Collections/course s. Tools By 2004 – 1600 knowledge modules By 2007 – 4500 modules	Index to open resources that fit a strict evaluation criteria. 7,762 OERs from range of disciplines. (6054 at UG and PG level)	Courses, course modules, OERs, and tools which added complications to licensing
Level of openness	Globally open	Globally open with parallel services containing more controlled licences	Globally open	NZ primarily but licence makes it open to all	Globally open	Globally open to contribute and use	Globally open to contribute and use	Globally open for users but restricted contributors	90% of contributors chose BC commons – open within Canada
Level of content management	Learning space – structured and lab space - unstructured	Service around content very important. National UK repository	highly centralised and tightly coordinated	National repository	Peer review of content. Comments added about content and how used. Classified and indexed.	Web 2.0 features (tags, ratings, comments, reviews, and social networking) to create an online experience that engages educators in sharing their best teaching and learning practices.	Open repository (content commons) system is basis as much as the content.	High level of selection criteria and addition of metadata and subject classification	Shareable Online Resources Repository
Encourages re-use and re-purposing	Key aim of lab space area	Key aim	No a key focus	Key focus	Key focus	Key purpose	Release 1 in 2004 – Roadmap aims to encourage re-use	Not a specific goal	Key focus
model	OERs structured	OERs with added	OCW institutional	OCW	OERs and CoP	Public model t&L	CoP model and	Index/Catalogue	OERS, CoP and

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	and unstructured Institutional model	value services to support I&t National model	model	Instructional design National model	15 discipline communities peer review CoP model	network	repository. Review online by users as well as managers	of OERs Catalogue model	repository. Also courses National model
Licence	CC Non commercial share alike	CC	CC	CC Share Alike 2.5 deliberately avoided non commercial restriction	CC	CC	Early adopter of CC	N/A	CC and BC Commons. IP owned by content developers not BCCampus
Success factors	Background of developing distance learning resources. Rapid development period. Commitment to openness in tools, interoperability seen as important. Choice of CC helped speed of process.	Due to start in 2009	Led the way and watched by the world. Huge institutional commitment. Huge financial investment. High quality content.	Lessons learned about developing course maps and developing high quality courses and content	Aligned with institutional strategies and needs and therefore overcomes institutional barriers. Rewards excellence by recognising individual contributions. Linking to prof devt of staff in member organisations makes cost efficiencies for institutions.	Community approach using web 2.0 sharing models.	Long established growth period and adapting to, and managing, changes. Embracing CC very early. Multidisciplinary team approach. Responsive to user needs.	Academic community crucial in selecting OERs	Tied in with bidding for funding rounds so high participation rates. Partnerships and collaboration. Common approach accepted across sector. Critical mass there and less time clearing rights so increasing use and re-use. Didn't allow for student access in licensing and then discovered that majority of usage tends to be students. Fear of competition significant barrier
Lessons learned	Early days but research approach likely to yield significant lessons for the global community. Remixing content more likely through basic tools that non	Service is outcome of lessons learned by JORUM 1. articulated in document - Jorum Repository Case Study: Business Models and IPR Arrangements for Adopting an Open	See http://tinyurl.com/66te6a Educators report very high impact on teaching practices. • Over 97% of educators ex-	Collaboration and sharing difficult without agreed framework. Complexities of taking courseware approach – who decides the focus areas	Benefits of collaboration Pedagogy embedded important for learner experience. Get buy in through	Benefits of collaboration Need to widen knowledge of OERs and potentials for sharing	Authors needed simple ways to deposit – word processors, edit-in-place. Early adopter of CC so fed into this community.	In early pilot stage – no data yet.	People happier to share within their own 'perceived' community . CoP – open online communities support the sharing and development of practice and courses, and

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	<p>technical users use – such as word processor, rather than XML.</p>	<p>Access Service¹¹⁴</p>	<p>pressed satisfaction with the quality of the course materials published on the MIT OCW Web site. <ul style="list-style-type: none"> • Over 47% have reused MIT OCW materials, or plan to in the future. • 76% agree that MIT OCW will impact their future teaching practices. </p>		<p>membership model. Peer review -difficult to sustain</p>				<p>professional devt.</p>
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114 <http://www.rsp.ac.uk/repos/casestudies/pdfs/jorum.pdf>

Appendix 5 Table 3 Business cases

General benefits to global community	Open	CoP	Subject-based	Institutional	National	Informal
Supporting subject-discipline communities to share	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SOME IMPACT
Encourages innovation and experimentation	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT	SOME IMPACT	SIGNIFICANT IMPACT
Shares expertise and resources between developed and developing countries	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS			SIGNIFICANT IMPACT
Supports re-use and re-purposing	SOME IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT
Supports community input to metadata through tagging, notes, reviews	SOME IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Supports effective retrieval through professionally created metadata	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Ensures trust through appropriate licensing	SOME IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Supports continued development of standards and interoperability	SOME IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Supports continued development of tools to support sharing and exchange	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports the sharing and re-use of individual assets	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Supports the sharing and re-use of complex learning resources	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Helps to develop critical mass of materials in particular subject areas	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT	
Supports ease of access through search engines such as Google	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT

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Benefits for national community	Open	CoP	Subject-based	Institutional	National	Informal
Cost efficiencies	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Decrease in duplication	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Supports cross-institutional sharing	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Provides access to non educational institutional bodies such as employers, professional bodies, trade unions, etc	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Supports shared curricula	SOME IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	
Provides evidence of the provenance of learning materials	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Supports discovery of most used/highest quality resources	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT
Supports broad vision of sharing across UK HE	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT	SOME IMPACT	SIGNIFICANT IMPACT	SOME IMPACT
Supports sustained long-term sharing	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Promotes the concept of lifelong learning	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Supports the notion that educational institutions should leverage taxpayers' money by allowing free sharing and reuse of resources	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	
Mitigates the risk of doing nothing in a rapidly changing environment	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Mitigates cost of keeping resources closed	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT

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Benefits for educational institutions	Open	CoP	Subject-based	Institutional	National	Informal
Maintaining & building on institutional reputation globally	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SOME IMPACT
Maintaining & building on institutional reputation nationally	SOME IMPACT	SOME IMPACT	SOME IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	POSSIBLE WITH RIGHT CONDITIONS
Attracting new staff and students to institution - recruitment tool for students and prospective employer partners	SIGNIFICANT IMPACT			SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS
Increased transparency and quality of learning materials	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT
Supports sharing across/between departments within institutions and interdisciplinary cross-fertilisation	SOME IMPACT	SOME IMPACT	SOME IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT
Shares expertise efficiently within institutions	SIGNIFICANT IMPACT			SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	SOME IMPACT
Encourages high quality learning & teaching resources	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Supports modular course development	SIGNIFICANT IMPACT	SOME IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT
Supports storage, management, preservation, attribution and retrieval of student content	POSSIBLE WITH RIGHT CONDITIONS			POSSIBLE WITH RIGHT CONDITIONS		POSSIBLE WITH RIGHT CONDITIONS
Easily incorporated with institutionally-owned technologies	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports the altruistic notion that sharing knowledge is in line with academic traditions and a good thing to do	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT
Likely to encourage review of curriculum, pedagogy and assessment.	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	
Supports preservation of learning resources	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Facilitates presentation of resources for accreditation bodies	POSSIBLE WITH RIGHT	POSSIBLE WITH RIGHT	POSSIBLE WITH RIGHT	SIGNIFICANT IMPACT	SOME IMPACT	

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	CONDITIONS	CONDITIONS	CONDITIONS			
Enhancing connections with external stakeholders by making resources visible	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT

Benefits for those supporting/facilitating learning	Open	CoP	Subject-based	Institutional	National	Informal
Increased personal recognition	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS
Supports sharing of knowledge and teaching practice	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT	SOME IMPACT
Encourages improvement in teaching practice	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SOME IMPACT	SOME IMPACT
Supports attribution	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS
Supports immediate one-off instances of sharing	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT
Offers one-stop access point for staff	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	SIGNIFICANT IMPACT	
Encourages multidisciplinary collaboration and sharing	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS
Supports CPD and offers evidence of this	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS

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Benefits for learners	Open	CoP	Subject-based	Institutional	National	Informal
Easy and free access to learning materials for learners	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Increased access options for students enrolled on courses (particularly remote students)	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Supports collaborative learning	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Supports development of student content within and outside formal learning activities	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Easily accessed through student-owned technologies	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Increased access for non-traditional learners (widening participation)	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Likely to encourage self-regulated and independent learning	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Likely to increase demand for flexible learning opportunities	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SOME IMPACT	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Likely to increase the demand for assessment and recognition of competences gained outside formal learning settings	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Likely to encourage peer support, mentorship and ambassadorial programmes	SIGNIFICANT IMPACT	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	SIGNIFICANT IMPACT
Evidencing skills development/recording assessment and feedback	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS	POSSIBLE WITH RIGHT CONDITIONS		POSSIBLE WITH RIGHT CONDITIONS

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