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Researching open content in education

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Contents

Introduction

Researching open content in education	4
---------------------------------------	---

Software and tools

Choosing and reusing content: why neither is as easy as it sounds	5
Using learning design as a framework for supporting the design and reuse of OER	8
Feeding from open courseware: exploring the potential of open educational content delivery using RSS feeds	15
A conversion pipeline for audio remixes	17
Embracing Web2.0: online video – beyond entertainment	19
Videoconferencing in open learning	21
Knowledge mapping for open sensemaking communities	27
MSG Instant Messenger: social presence and location for the ‘ad hoc learning experience’	30
Creating accessible SCORM content from OpenLearn material	33
Open metadata for open educational resources in an open infrastructure	37
The Open Learning Object model for the effective reuse of digital educational resources	39

Sustainability

Framing for sustainability: identifying values within open content provision	42
‘Bridging the abyss’: open content to meaningful learning	44
Is there such a thing as sustainable infodiversity?	47
Participatory design in open education: a workshop model for developing a pattern language	50
The TESSA OER experience: building sustainable models of production and user implementation	53
Embedding open content in education: peoples-uni.org	55
Repurposing for an open education repository: quantity, quality and processes	58
A case study framework for open content projects:	
Free High School Science Texts and the case for continuous learning	60
Sharing elearning content: what are the main challenges?	63
From Africa through Germany to the UK and back again: the potential of Open Educational resources	67

Research agenda

From boot camp to holiday camp? Some issues around openness, Web2.0 and learning	71
Open Learning Initiative: measuring the effectiveness of OLI statistics course in accelerating learning	74
Devising a participatory open educational resources architecture for higher education in sub-Saharan Africa: a typological approach	77
A panel session proposal for OpenLearn 2007	81
An OER research agenda: reflections of an international Community of Interest	86
Learning about learning in Wikiversity through action research	87

User experience

Learner-Generated Contexts: sustainable learning pathways through open content	90
Learning from ‘OpenLearner-interactions’ using digital research techniques	95
Impact of Open Educational Resources in The Netherlands	99
The whole is more than the sum of the parts: pathways and programmes for Open Learners in psychology	102
Creating Open Educational Resources: a workshop	104
Finding your way to an open online learning community	106
Open Education and the Sussex Learning Network: a partnership perspective	109
How long will it take me? Assessing appropriate study times for open educational resources	111

Researching open content in education

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Welcome to OpenLearn2007 and the proceedings of the conference. We believe that we have brought together an interesting group of people and presentations to discuss and consider how open content is being used by institutions, educators and learners. In these papers you will find views on the tools, methods and future for open content applied in education.

Taking an open approach to content is a relatively new approach to sharing educational materials. The William and Flora Hewlett Foundation has been a key supporter for many of the major initiatives since establishing a programme of funding for open educational resources in 2001. In 2006 The Open University in the UK became a recipient for one of their grants for its Open Content Initiative, launching the OpenLearn site in October 2006. Alongside work in OpenLearn to develop the content and tools needed for the sharing of resources in an open way, OpenLearn sought to address some of the research issues and play a role in developing the research community around open content. OpenLearn2007 is a chance to celebrate one complete year of public operation for OpenLearn and to bring together researchers working on open content with others researching aspects of learning.

The conference has four main themes:

- Research agenda
- Sustainability
- User experience
- Software and tools.

Our work in OpenLearn sees these as key challenges. Toolsets are needed both for the production and management of resources and for the ways that learners can make sense of the content; however the impact then needs to be assessed in terms of the user experience both for learners and producers. As a movement open content has to now move away from limited time initiative to embedded techniques, measurable benefits or even income to provide self-sustaining activities. Overlaying these aspects is the challenge of how to carry out research with a dispersed user base that may have no allegiance to any site or provider.

The papers in these proceedings cover each of the themes and will provide interesting and engaging presentations, often drawing from practical experience. We feel that there is an interesting mix of experience from the Open University itself, others in the UK and a strong international presence. Selected submissions in these proceedings will also be developed into longer papers that will appear in the Journal of Interactive Media in Education.

Choosing and reusing content: why neither is as easy as it sounds

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Abstract

This paper draws on research into repository use and use/reuse of learning objects to identify gaps in what we currently know about choosing and reusing online content within new contexts. It suggests that the criteria that are used to choose between learning objects is not well understood and that the non-technical challenges to reusing that content may still be substantial. The author further suggests that whether the context for reuse is a 'blended', or fully online educational environment, is key to how the choice will be made and what may be desirable (or not) in open content used within it.

There is now no lack of online content in reusable form. OpenLearn and other open content initiatives are particular examples of online repositories within a range of such collections. They are particularly unusual in being geared to access by individuals wishing to locate content to study, and those who are looking for content to use in (or to influence) their own teaching. This is part of their openness and adds to their interest. OpenLearn is at the same time offering a structured resource for teachers who are used to formal collections and categorisations and offering a service to individual users who will be more diverse in terms of their backgrounds and motivation for accessing.

The individual user may be comparing her experience of browsing OpenLearn content with that s/he has in searching the web more generally. S/He may have happened upon the site by accident. The tutor or other institutional user is more likely to compare this repository with other formal collections to which s/he also has access. This may involve applying formal measures of quality to the content from the point-of-view of someone who is themselves an expert creator of learning materials. There will be comparisons with their own institutional alternatives or perhaps with content available through other 'closed' collections or repositories.

To date we know more about how the institutional user approaches a repository and this is the perspective that this paper considers here. In fact it is only recently that researchers finally have the opportunity to observe reuse and repurposing by institutional users of learning objects and other digital content within realistic and real-life settings. Earlier research into selections amongst learning objects from different sources external to the host institution (e.g. Christiansen and Anderson, 2003) were necessarily inauthentic, not only because there was a lack of suitably reusable content (learning objects) at that time, but also because researchers found it difficult to access and 'search inside' many of the repositories that then existed. They were unable to make informed judgement about the material quickly or effectively.

This problem has receded as some national repositories (e.g. Jorum (<http://www.jorum.ac.uk/>)) offer direct access to content and not simply links, while international

initiatives such as GLOBE (<http://globe-info.org/globe/go>) broker between multiple national repositories (themselves using federated searches) to ease location and identification of alternative content. We finally can offer teachers and tutors a real choice between different content options and through research with potential users faced with authentic choices discover something about how and why choices between content alternatives are made and what the intended and actual use may be.

This paper contrasts research in which the author was involved arising from two very different styles of repository in use by institutional users searching for reusable teaching content:

- **Informal personal repositories:** The use of wikis, blogs, forums and email to share teaching resources and ideas around these resources. This draws on recent research at The Open University and University of Leicester conducted for the PROWE (Personal Repositories Online: Wiki Environments) project. It also re-examines sharing across courses which use learning objects and the onward use/reuse of that content into other contexts and by other users.
- **Formal national and/or discipline or community specific repositories:** Examples of national repositories include Merlot and Jorum while examples of subject-specific repositories include Scottish Learning Exchange, a collection of materials for social work teaching in Scotland. The author was involved in evaluating that project in its pilot stage as Stor Curam.

The author also develops the idea of a continuum of user concerns from the very informal to the very formal – from personal, through departmental, institutional (e.g. VLE), regional and national repositories to international and open repositories. She argues that the style of collection will impact on the type of audience it draws – from a very local and restricted list of colleagues, to an international audience where there is no direct connection between the author of the material and its user.

Arguments range as widely as ever about what makes a learning object, or any other stand-alone digital course content really reusable. The questions have simply shifted in focus with a Web 2.0. Will contextual metadata hold the key, and if so how well have we thought through the type of metadata we will in the future collect and expect to access (Duval, 2006)? Do we need to look to more relaxed, less demanding and more fluid tagging approaches, such as use of folksonomies?

Much of the current research into the design of repositories is based on understanding the technical needs of users and providers, or the design of effective systems – rights requirements and metadata standards, federated search facilities and RSS feeds. However there are important questions to be answered which can only be answered by potential users, and may only be well understood by researchers in contexts of use.

One of the tensions in use/reuse is whether the use will be happening in a blended or 'pure' environment. Can make justifiable comparisons between:

1. Use of learning objects where the whole course is made up of learning objects and designed to exploit this. As yet unusual, these offer examples of the 'purest' creation of reusable material, and are most often found in distance learning or wholly online courses such as those offered by The Open University's Institute of Educational Technology (Mason, Pegler and Weller, 2006).
2. Use of learning objects as components within a course which largely relies on other approaches. This is the sort of a 'blended' learning model supported in the work of the Centre for Excellence in Reusable Learning Objects in the UK (<http://www.rlo-cetl.ac.uk/>) and reported in the research of John Cook and Tom Boyle

We could expect that the use of OpenLearn material is most likely within a Type 2 (blended approach). Most elearning is, after all, blended learning (Littlejohn and Pegler, 2007) yet most information about reuse of learning objects centres on non-blended implementation.

Many of the requirements placed on reusable learning objects, e.g. interoperability, are unnecessary if the learning object is being used within a blend which is predominantly face-to-face teaching.

The lessons on reuse that can be taken from different implementation contexts vary depending on how 'blended' or 'pure' the application will be, and the type of repository arrangement within which it is presented as well as how and why the resource was created in the first place. There is little common ground between a course blended from existing resources re-classified as learning objects, and one which draws only on resources which have been created as fully reusable learning objects. We learn different things by research into these two quite different contexts.

Using learning design as a framework for supporting the design and reuse of OER

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Abstract

The paper will argue that adopting a learning design methodology may provide a vehicle for enabling better design and reuse of Open Educational Resources (OERs). It will describe how a mind mapping tool, Compendium, is being used to help designers and teachers create and share learning activities. It will consider how initial evaluation of the use of the tool for learning design has been positive; users report that the tool is easy to use and helps them organise and articulate their learning designs. Importantly, the tool also enables them to share and discuss their thinking about the design process.

Research and development activities around OERs and associated issues have increased dramatically in recent years; and Downes (2007) notes that there are numerous arguments being put forward for their benefits and application. Hylén (2006) discussing some of the opportunities and challenges associated with OERs raises three main challenges: the lack of awareness of copyright issues, quality assurance and sustainability. However, this paper argues that a central challenge to the successful uptake of OERs focuses on the design process and goes on to argue that a clear framework to enable effective design is needed to ensure that OERs can be adapted and reused.

We have previously argued that there is a gap between the potential of technologies to support learning and the reality of how they are actually used and that this is due to a lack of understanding about how technologies can be used to afford specific learning advantages and to a lack of appropriate guidance at the design stage (Conole et al. 2007). This paper puts forward a potential solution to these issues and outlines the basis for a learning design methodology which might be adapted and applied in an OER context. It describes a project which is exploring the design for learning issues within a distance learning institutional context, the UK Open University. The initial focus of the work is reported elsewhere (Conole et al., 2007, Conole, forthcoming), this paper will focus on how we are using Compendium as a tool for aiding the design process. It will describe the rationale behind the work and initial findings from the evaluation of eight faculty-based workshops run using the software.

Our goal is to build on recent research on learning design to develop a tool that provides support in the course design process with an emphasis on the use of technology-enhanced learning. Learning design refers to the range of activities associated with creating a learning activity and crucially provides a means of describing learning activities.¹ Users of the system would include both course teams as well as others involved in the design process such as learning technologists or those tasked with helping course teams translate their ideas into technical solutions. The learning design tool will act as a bridge between good pedagogic practice and effective use of new technologies.

¹ We are aware of the long history of work in Instructional Design but believe the term 'learning design' better describes the methodology and approach we outline which is inherently holistic and contextualised in nature. See Conole, forthcoming for more detail.

We have identified six main reasons why adopting a learning design approach is beneficial (Conole et al., 2007):

1. It can act as a means of eliciting designs from academics in a format that can be tested and reviewed with developers, i.e. a common vocabulary and understanding of learning activities.
2. It provides a means by which designs can be reused, as opposed to just sharing content.
3. It can guide individuals through the process of creating new learning activities.
4. It creates an audit trail of academic design decisions.
5. It can highlight policy implications for staff development, resource allocation, quality, etc.
6. It aids learners in complex activities by guiding them through the activity sequence.

The OU is currently undertaking a cross-institutional Learning Design project. We are adopting an iterative methodology focusing on two areas of activity in parallel: a) capturing and representing practice – through user consultation and case studies and b) supporting learning design – through the development of an online tool and associated workshops. The online tool will be populated with both the information derived from the case studies, as well as selected resources and expertise drawn from our own experience in the field and the wider research literature.

Design is inherently a creative and messy process, dependent on a rich range of interconnected factors, so one approach is likely to meet the needs of all users. Therefore part of our philosophy in terms of developing a specification for the online learning design tool is that it needs to accommodate the following characteristics, rather than impose a single 'correct' way of working:

- It operates at different levels, for example high-level learning outcomes, down to assets.
- It combines different types of activity, for example planning pedagogy, creating resources, specifying support, etc.
- It is an iterative process; an individual may switch between levels.
- Users will approach the design process from different perspectives; working from available resources, from assessment, or with specific technology in mind.
- It is both an individual and a group process.

Our initial discussions included the development of a use case scenario of how such a tool might be used. We envisaged the tool providing a number of elements which need to be considered in the creation of a learning activity, such as what tools, resources, or roles might be involved. Each of these would have a number of predefined aspects derived from our survey of OU practice and external projects. From their preferred starting point users could drag elements onto their workspace and start to build up their learning activity. The system will then prompt related elements, for example, if the user has selected a collaborative activity, then tools such as asynchronous conferencing, wikis etc, will be shown, along with additional advice and examples. The user would then build up an activity sequence, adding in conditionals and roles. The tool will prompt the user to add in required data, e.g. learning outcomes, estimated study time. In addition, if the activity is part of a course, then the system will import data from existing administrative systems, relating to level, subject area, etc. All designs will be saved to a repository thus increasing the range of designs for future users to draw upon. The system will build on user input, using web 2.0 principles, including user tagging (tag clouds) to demonstrate popularity, data mining established links between designs and tools, user comments, etc.

We are adopting an iterative process to the development of the prototype tool with the close involvement of the intended end users, so that we could learn from their use of the prototype and adapt accordingly. We felt such close user involvement will help us to identify how users interact with the different features of the tool as well as indicating what kinds of support and advice they find useful.

We selected the mindmapping software Compendium as our initial prototype for the learning design tool for a number of reasons. Firstly because it was produced at The Open University, we felt there was more opportunity for further tool development specifically in terms of learning design requirements. Secondly, Compendium supports the creation of a range of visual mapping techniques, including mind maps, concept maps, web maps and argumentation maps (Okada and Buckingham Shum, forthcoming), which we felt offered the potential for a range of flexible approaches to the design process. Compendium comes with a predefined set of icons (question, answer, map, list, pros, cons, reference, notes, decision, and argumentation). The creation of a map is simple, users drag icons across and can start to build up relationships between these through connecting arrows. Each icon can have an associated name attached with more details contained inside the node, an asterisk appears next to the icon and if the user hovers their mouse over this the content inside the node is revealed. Other types of electronic files can also be easily incorporated into the map such as diagrams, Word files or PowerPoint presentations. The reference node enables you to link directly to external websites. Icons can also be meta-tagged using either a pre-defined set of key words or through user generated terms. Maps can be exported in a variety of ways from simple diagrammatic jpeg files through to inter-linked websites.

Figure 1 illustrates a learning design mapped out in Compendium, it represents a case study on the use of a wiki to undertake a collaborative requirements gathering exercise in computing. Two roles are shown (tutor and student), along with the respective tasks. Associated tools, resources and outputs associated with each task are shown alongside, with arrows indicating connections. Minocha et al. (2007) provide a description of the development of this particular learning activity and how it is being evaluated.

We created a dedicated set of learning design icons, to complement the generic set available within the tool. As part of the core functionality of the tool it is possible for users to create and incorporate their own 'stencils' of icon sets. Once the appropriate set of icons have been identified, they are labelled with appropriate text and given an overarching stencil name set. We choose to focus on a simplified list of icons to represent what we felt were the key aspects of the design process, namely: task, role, tool, resource, output, group, assignment, and activity. All of the icons are of the same type except for the activity icon which is a variant of the generic map icon. As with the core Compendium icon set users are able to rename each of the icons to something more appropriate to their context. Once created the stencil set is opened via the tool drop-down menu. Figure 2 provides a screenshot of Compendium, showing the generic set of icons on the far left-hand side, along with the learning design stencil 'LD2' we created.

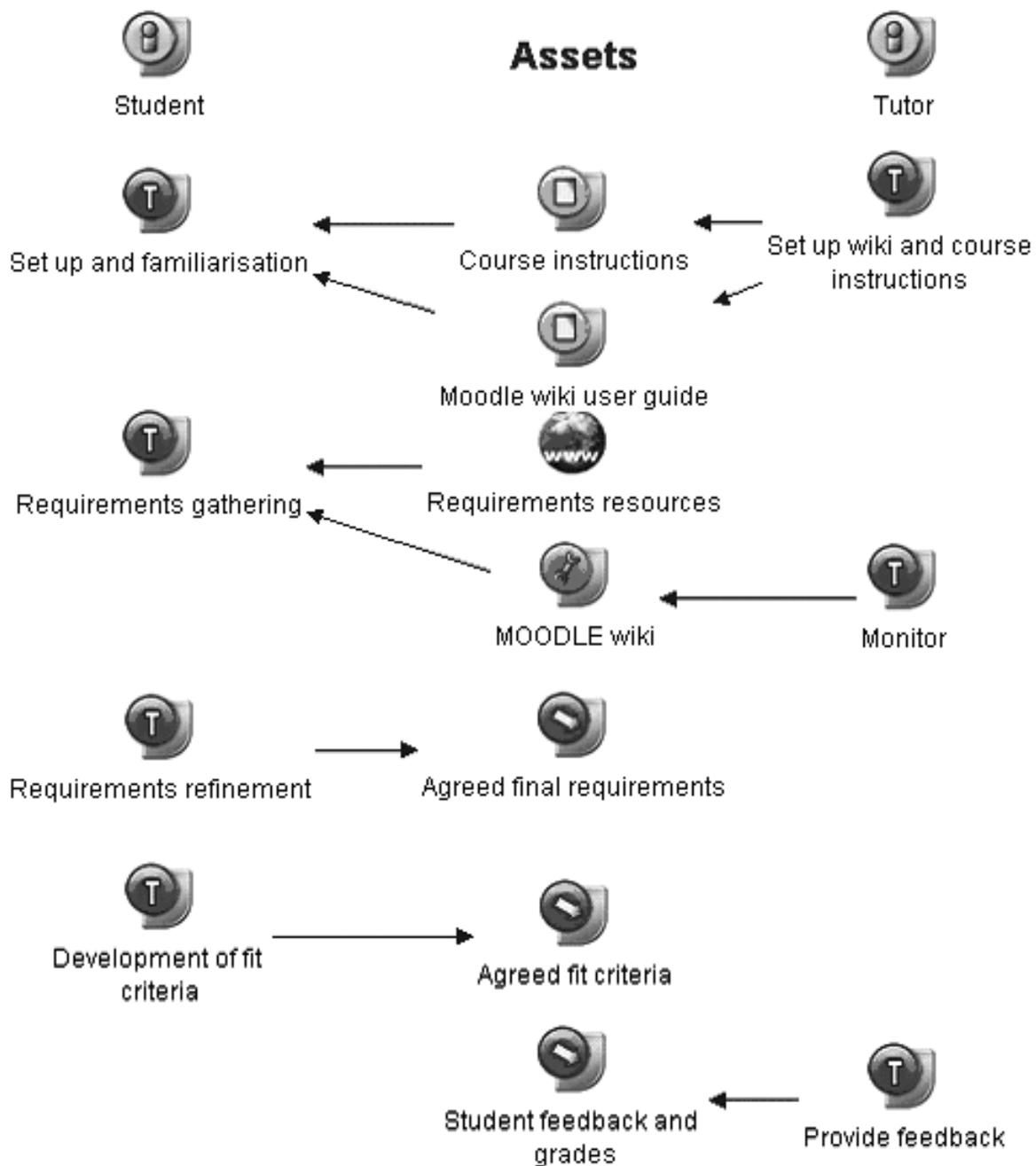


Figure 1. Visual representation of a collaborative activity using a wiki

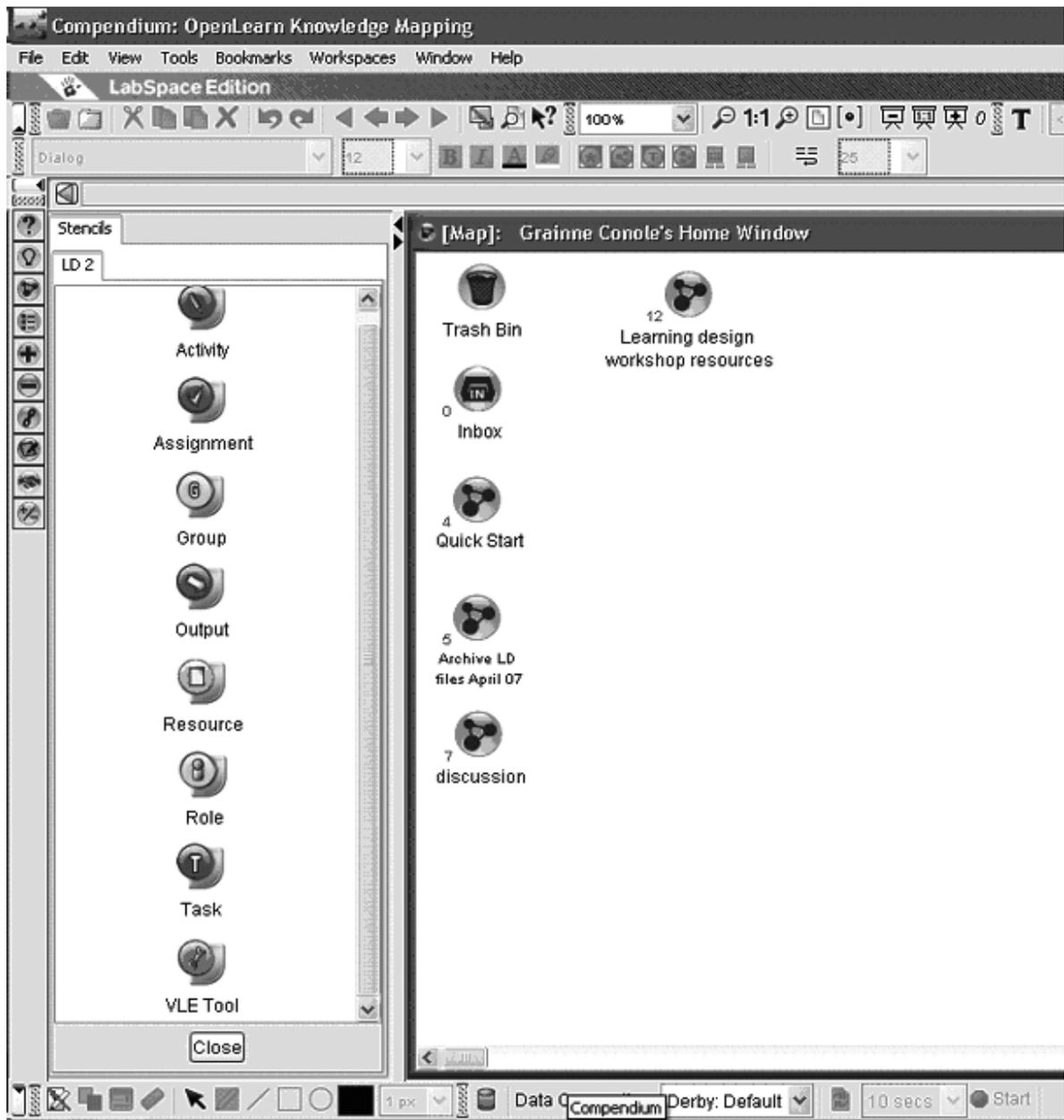


Figure 2. Screenshot of Compendium with the LD2 learning design stencil set of icons

We used the new stencil set as a means of representing the learning activities being described in the case studies. As we began to represent this and based on feedback from users we realised that our initial iconic representation was overly complex and so we fixed on a simplified approach which consisted on a column for each role (student, tutor, etc) and an associated column for the 'assets' associated with that role (i.e. any resources, tools or outputs).

We also wanted to experiment with using different means of supporting the design process by creating a set of adaptable templates which users could work through and adapt to their own context. In addition to the creation of iconic stencil sets, Compendium also enables the user to create customisable templates. A template is a Compendium xml export file, which holds a set of maps/nodes which the user might use frequently. We used this template facility to create a series of learning design templates focusing on a core set of different approaches to the design process:

1. Simple step-by-step guidance. Figure 3 provides a screen shot showing the LD template set on the side, along with the open 'Step-by-step' template.
2. Empty 'swim line' style diagrams showing the key components for creating a diagram.
3. Mapping templates: a simple one linking learning outcomes, tasks and assessment and one linking tools, discipline problems, outcomes, assessment learning activity and topics covered.
4. Two focusing on the 'affordances' (Conole and Dyke, 2004) that different tools and activities potentially offer.

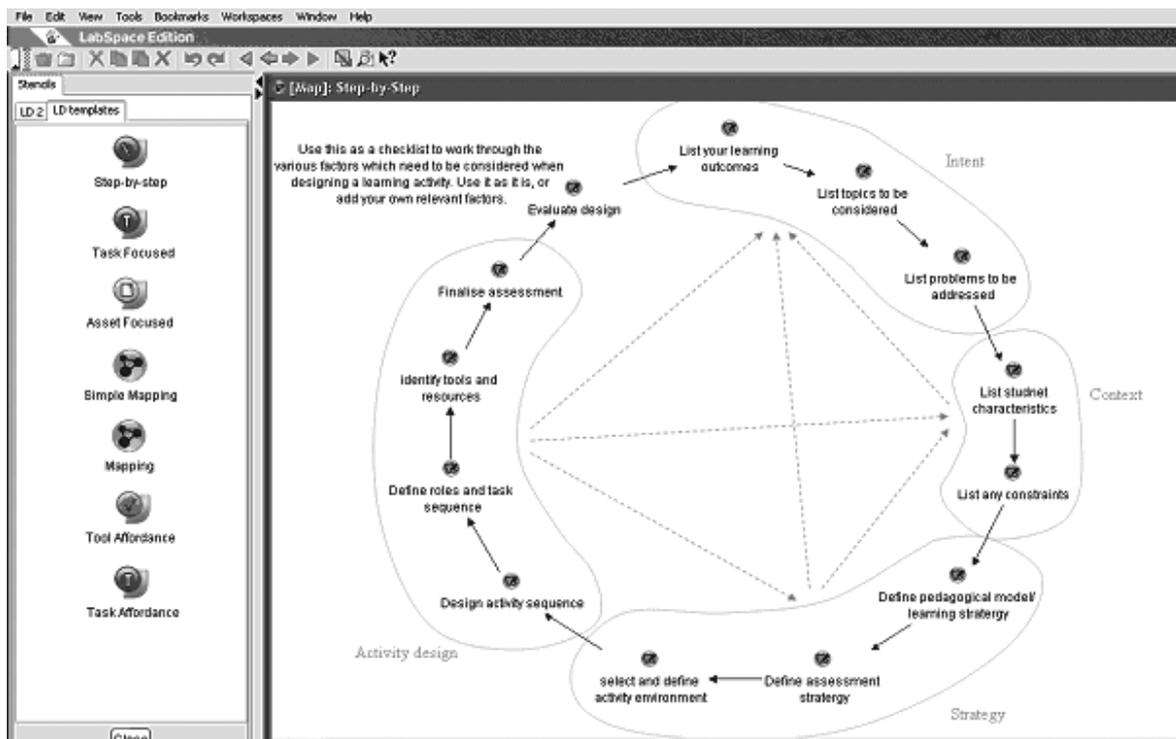


Figure 3. The seven LD templates with the step-by-step template open

During March and April 2007 these resources were trialled through a series of workshops. The first consisted of a group of critical friends made up of elearning researchers and educational developers. Feedback from the workshops has been very positive with attendees reporting that they liked Compendium, found it easy to use and a useful tool to help them not only think about and articulate their design process, but also as a means of representing and sharing their design. However a number of issues remain; some users find it difficult to think visually, the prototype currently operates at a micro-granular level of activity and does not enable the user to switch to consider macro-design issues at the course level, and despite the relatively easy interface some users are likely to require more training and support than others. In addition it is unclear yet how such a tool might be used over a longer time frame within a collaborative course team to build up a shared and evolving design artefact.

We are now adapting these workshops for use in an OER context as part of the OU's OpenLearn project and will be able to report back at the conference. In particular we want to evaluate how the use of this approach might support the development and reuse of OERs. We continue to refine the functionality of the tool and are currently exploring how to integrate an adaptive set of help facilities.

Conclusion

The paper has discussed how adopting a formal learning design methodology might enable better creation and reuse of OERs. It has described the approach we are adopting at The Open University, including the rationale for our approach and the features of the prototype we have developed. Initial findings from an evaluate of its use are reported.

This is a challenging area rife with a range of issues both pedagogical and technical. Most importantly it is unclear yet **how** such an approach might be adopted and taken up by the community and to what extent it might help with the ultimate aim of facilitating easier and more frequent use of OERs. However despite this we believe adopting this learning design methodology is a useful approach for formalising and hence capturing existing practice and a mechanism for identifying associated barriers and enabled to uptake and reuse. The conference presentation will present a summary of process to date.

Acknowledgements

The work described in this chapter is part of an institutional project on learning design. Others involved include: Stewart Nixon, Andrew Brasher, Peter Wilson, Simon Cross, Pat Grace and Mary Thorpe.

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Feeding from open courseware: exploring the potential of open educational content delivery using RSS feeds

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Abstract

An implicit aim of many open courseware projects, including OpenLearn, is to encourage the informal use of open educational resources, as well as its reuse. In this presentation, I shall describe several examples of how open courseware can be disaggregated into component parts that can be easily shared and republished using RSS and OPML web feeds.

From 'daily learning chunks' delivered to candidate PLEs such as PageFlakes using a Web 2.0 mashup to mobile access, this approach can also be used to turn bibliographies into online bookstores and provide a way of displaying media assets in a rich media slideshow.

The original wave of opencourseware initiatives, such as MIT's OpenCourseware project, sought to make high quality educational resources available for reuse and repurposing by whosoever wanted to avail themselves of that content. More recent thinking implies that just providing the content is not enough. Approaches such as OpenLearn provide a learning environment around the content that can provide personal learning support tools and support the formation of learning communities and.

Although providing 'reuse and remix' opportunities forms part of the war cry for the OER community, few demonstrations of just how the content may be used in such a way are offered. In the same way that the learning object economy that was much heralded by educational technologists never seemed to be as successful as was originally hoped, is it possible that the hoped for reuse and remix of OERs will similarly fail to take off (Lamb, 2007)?

The granularity at which open courseware content is typically published – the course, or course unit – makes it difficult to consume bite size chunks of content easily, and arguably makes it difficult to discover reusable or remixable items of content.

As I have written elsewhere, '(t)he easiest remix is not really a remix at all, and barely counts as a reuse, though it is a republish or represent—just take a direct copy of someone else's content and make it your own property/publish it on your own site, in your own content area' (Hirst, 2007)

At the simplest level, exposing open educational content via an RSS feed immediately opens up this republishing opportunity.

Taking a lead from social websites such as YouTube and flickr, where content can be shared at a fine level of granularity (the movie or picture level) as well as at an aggregated level (a playlist or photostream), I shall describe several implemented examples of how both MIT Open CourseWare courses, and Open University OpenLearn units, can be disaggregated into component parts and then republished in a syndicated way using OPML and RSS feeds, as well as through social networks.

One advantage of making content available via RSS is the wide variety of pre-existing

tools that are capable of consuming RSS feeds. For example, it is possible to consume RSS feeds RSS readers (e.g. Bloglines or Google Reader) or webtops (e.g. Netvibes, iGoogle or PageFlakes), as well as republishing content in RSS format as PDF documents, or even audio files. Mobile support for RSS feeds is also widespread.

However, the use of RSS feeds as a significant route for publishing OER content does not seem to be widely recognised. For example, the Open Educational Practices and Resources. OLCOS Roadmap 2012 (Geser, 2007) uses its section entitled 'RSS feeds enrich educational portals and learners can subscribe directly to thematic content feeds' to refer more to the way learners can aggregate content around a particular topic from formal and informal publishers, such as news services and bloggers, without suggesting that OER providers themselves might publish educational content in this way. This in part reflects the mindset that RSS is used to publish changeable content or content that is regularly updated, as opposed to providing a way to syndicate fixed or static content, such as unchanging course material.

In this presentation, I will describe the process by which early demonstration RSS feeds for OpenLearn content were generated from the original OpenLearn XML content and MIT OCW web pages using various third party online tools. In effect, this is just republishing the materials in the RSS medium, in addition to the HTML pages or printable PDF documents that are typically made available.

This 'RSSified' content can be used as the basis for republishing and remixing the content by third party users, or consuming it in the location of their choice. For example, RSS versions of course units can be viewed using candidate personal learning environment 'webtops' such as Netvibes and PageFlakes, or distributed as 'daily learning chunks' using OpenLearn_daily, a Web 2.0 mashup involving OpenLearn and Yahoo Pipes; and simple content remixes can be derived using RSS feed filters and simple content analysis tools.

Reusing or repurposing material at the level of granularity with which it is published (that is, at the course or unit level) is problematic on several counts: the physical format of the materials may not be appropriate, the way multiple topics covered by the materials are bundled together may not deliver the correct storyline for the person wishing to reuse (elements of) the course, the materials may not have the correct blend of media assets for the intended reuse, and so on.

By disaggregating content and individual assets and republishing them as separate items in a single RSS feed, the component parts of a course can be made available as a cleanly packaged bundle of separate items without the need for heavyweight packaging formats.

As a demonstration, I will show how an MIT OCW course can be atomised in such a way that bibliographic information and media assets related to course examples can be republished via shareable, rich media feeds, and how the course as a whole can be disaggregated into component parts that can then be republished in aggregated form using an OPML feed.

I will also describe an automated process for treating an OpenLearn course unit in XML form as a database that can be 'mined' – or 'asset stripped' – in several different ways to expose particular components of the course, such as link collections or image collections. The link collections can then be used to seed custom search engines, and media assets can be passed into course related photostreams or online radio channels.

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A conversion pipeline for audio remixes

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Abstract

This paper describes how digital talking books with embedded functionality for learners can be generated from content structured according to the OU OpenLearn schema. It includes examples showing how a software transformation developed from open source components can be used to remix OpenLearn content, and discusses issues of generating synthesised speech for different knowledge domains. In conclusion ways in which the techniques can be applied to the remixing of material containing mathematics content conforming to the Mathematical Markup Language MathML are considered.

Introduction

Instances of elearning material can be viewed as conforming to a particular structure, albeit in many cases this structure is implicit rather than explicitly declared. Examples of explicitly declared structures include XML schemas such as the XHTML and Open University Structured Authoring schema. This paper demonstrates how value can be added to content by combining the semantics of different schemas to yield instances of learning material which benefit from the semantics declared within the schemas. In section 2 a software tool for automating the transformation of simple textual material into a Digital Talking Book (American National Standards Institute 2005) is described. This transformation combines the teaching and learning semantics provided by the OU schema with the talking and listening semantics provided by the Digital Talking Book (DTB) schema to yield a talking book with embedded functionality for learners. A DTB is a set of files, principally XML files for textual content, control of navigation and text to audio synchronisation (achieved through SMIL), plus audio files in mp3 format. For a learner to make use of a DTB a DTB reader is required: a variety of readers and players are available, some being software tools others being hardware. Examples showing how the transformation tool has and could be used to remix open learning content are given in section 3. Conclusions are presented in section 4.

The transformation software: DAISY Pipeline

The Daisy Pipeline is open source software for converting various formats into DTBs. It comprises a software framework and API under which a series of individual transformers can be configured, sequenced and run to transform content into a DTB file set. I have developed a transformer in XSL for converting content conforming to the OU OpenLearn schema into content conforming to the textual content component of the DTB file set; the transformer is named OU2DTB.

Using this OU2DTB transformer followed by an existing transformer (the narrator) enables automatic transformation of OpenLearn content into a DTB containing features of use to learners. For example, standard DTBs ‘talk’ until they finish or the listener switches them off. The DTBs generated through the OU2DTB transformation will stop after asking a question within in an activity, and wait for the user to hit a key i.e. it will not read out the answer or discussion until the learner indicates they are ready by hitting a key.

Remixing scenarios

An aim of the pipeline described above is to allow a remixer to concentrate on the pedagogic structure of the material. It shields them from investing time in generating audio versions of the text, synchronising the text and audio, and inserting the controls needed to effect the question/answer example given above.

A further benefit of DTBs created by the Daisy Pipeline is that each sentence in a block of text is given its own unique identifier in the DTB file set. In addition, the Pipeline generates the SMIL and audio files necessary to navigate the book at the sentence level. This means that other applications and/or processes can operate on the book at this level of granularity. For example, podcasts composed of items including just a few key sentences of audio and text can be automatically generated. In general, one difficulty with this sort of automatic generation is identifying the key sentences.

In the case of OU resources information provided by the OU schema enables sentences with particular teaching and learning purposes to be automatically identified. By combining the teaching and learning semantics provided by the OU schema with the reading and listening semantics provided by Daisy, it is possible to generate other types of remixes e.g.:

- podcasts containing only the activities within a particular unit of learning
- mixes intended for ‘skim listening’ (Naughton, CTSS conference 2007), for which the OU schema informs the way a unit is summarised and restructured before the audio is generated.

However, one aspect of the pipeline that can require manual intervention is the configuration of the speech synthesizers within the pipeline. Though the quality of the voicing produced by modern speech synthesizers can be very good, the nature of some higher education material can mean that customisation of the synthesiser is required. For example, some disciplines make use of specific vocabularies, acronyms and pronunciations. This means that although the fully automatic process will often yield audio content which is suitable as a prototype, manual intervention to configure the voice synthesizer for different disciplines may be required to achieve high quality ‘readings’.

Discussion and conclusions

The pipeline developed enables remixers to concentrate on the pedagogic structure for simple (mainly textual) material which conforms to the OU OpenLearn schema, and produce Digital Talking Books and other remixes featuring audio content. Experiments with non-textual material e.g. MathML are planned and will have taken place by the time of the OpenLearn conference, so the result of these will be reported in the conclusion.

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Embracing Web2.0: online video – beyond entertainment

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Abstract

This paper explores the value of new media and delivery formats such as audio and video podcasts as learning objects and considers alternative delivery models such as RSS subscriptions versus user download on demand. I have investigated the problem of how to translate the success of my public blogs and podcasts into the design of learning objects that will be equally popular with students. I will discuss possible roles for audio and video podcasts as learning resources, and the value of the RSS subscription model for delivery of open learning media.

Web2.0 is 'a perceived second-generation of Web-based services such as social networking sites, wikis, communication tools, and folksonomies that emphasise online collaboration and sharing among users' (http://en.wikipedia.org/wiki/Web_2.0). Even traditional campus-based degree courses in higher education are experiencing the long tail, 'a low-frequency or low-amplitude population which comprises the majority' (Chris Anderson, *Wired*, October 2004) and academics are spending the majority of their time dealing with low achieving, problem students, which often leaves little time for high fliers who are equally deserving of support.

During the last two years, I have spent considerable time creating freely-available open learning objects in the form of extended blog posts, audio and video podcasts and embedded FLASH presentations. This approach has been very successful, as evidenced by the rapidly increasing demand for these resources and their high Google rankings.

In order to attempt to translate this open learning approach into traditional campus-based courses, I studied two groups consisting of ~150 first year and ~90 second year science students. Learning support materials were delivered to these groups of students via an institutional VLE. The success of my public audio podcasts did not translate directly to the student cohorts studied. However, short videos made available via the VLE without an RSS subscription model were much more acceptable to students.

Based on extensive qualitative and quantitative data, I will discuss student's perceptions of these new media formats, and describe the outcomes of models I have tested for the use of RSS feeds for push delivery of learning materials to students. In both public and student cohort-specific arenas, the push delivery subscription model via RSS is a barrier to access. While a small minority of eager consumers are happy to subscribe, a participation inequality phenomenon is evident here as in other forms of online interactive media, e.g. blog comments. A large majority prefer the click and download model (pull rather than push delivery) to access the learning objects to the subscription model. In the case of student cohorts accessing the materials via a VLE, this is a potential advantage rather than a problem, simplifying delivery of learning objects by eliminating multiple channels and the additional software necessary to access them (podcatchers, iTunes, etc).

Rather than RSS subscriptions, directly downloaded files and embedded FLASH presentations are the de facto gold standard for the delivery of open learning materials and are strongly preferred both by the student cohorts I have studied and by the wider online learning community. Increasingly, new technical resources make provision of such learning objects easy for non-coders to generate, e.g. YouTube (www.youtube.com), SplashCast (splashcastmedia.com), etc.

The runaway success of 'viral' video sites such as YouTube provides a model for high levels of penetration into student populations which cannot be ignored in the design of learning materials, but considerable further research is necessary to determine both the effectiveness of these new formats and cost-benefit analysis of their production. Students have strong preconceived perceptions of these new formats, repeatedly commenting that they only listen to audio podcasts on computers because these are associated with 'work', whereas personal mobile devices such as mp3 players and mobile phones are reserved for 'entertainment'. Students carve out a range of online spaces and are reluctant to let social and academic spaces overlap. Careful thought needs to be put into the production of educational 'viral' videos. Excessive informality may be less attractive to students who perceive themselves to be in an online 'work' environment than a slightly more authoritative delivery. The apparent informality of the most successful 'viral' videos can be deceptive. *lonelygirl15*, the most successful YouTube video blog, was in reality a carefully crafted product of skillful filmmakers. More widespread use of online video learning objects has implications in terms of staff resources and training. Traditional HE audiovisual departments are not ideally placed to produce this type of learning material.

How do we manage the long tail in education? We don't. A controlling approach to open learning objects is as surely doomed to fail as centrally managed economies crumbled in the face of market capitalism in the 1980s. By embracing a Web2.0 approach to learning objects, we allow academic staff to support learners on a much more individual basis through the communication channels provided by technologies such as blog comments, voting systems and email. There is still much to learn about the optimum use of these rapidly evolving technologies in education.

Videoconferencing in open learning

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Abstract

This paper presents naturalistic videoconferencing interactions hosted in an online technology enhanced learning environment, providing open educational resources and collaboration tools. We argue that apart from synchronous online collaboration, videoconferencing is a technology that can be used in other ways in virtual learning environments, and that its products can be considered as reusable learning objects in an open learning context. In this study, we give some insights into how the tool is used by different communities.

Introduction

As online learning can be a lonely experience with no teachers or co-learners physically present round, social software can be used to enhance communication in virtual learning communities either moderated by educational practitioners or including independent open learners. Collaborative media can enhance the sense of community in self-motivated learners and online learners in general, connecting them through wikis, forums, instant messaging, email, videoconference, ambient awareness tools.

This paper presents naturalistic videoconferencing interactions hosted in an online technology enhanced learning environment, providing open educational resources and collaboration tools (<http://labspace.open.ac.uk/>: an experimental zone for educational professionals and self-motivated learners). We argue that apart from synchronous online collaboration, videoconferencing is a technology that can be used in other ways in virtual learning environments, and that its products can be considered as reusable learning objects in an open learning context. In this study, we give some insights into how the tool is used by different communities.

Findings

FlashMeeting is a lightweight videoconferencing application, which runs in a web page with the Adobe Flash browser plug-in. It allows up to 25 attendees to be connected from anywhere in the world by just clicking on a URL. Once the booking details are submitted via an online form, the system generates a URL, which can then be forwarded to meeting attendees by the person who booked the event. During the videoconference, while only one person can broadcast at any one time, the other users queue by raising a symbolic hand and wait for their turn or interrupt the current speaker in order to broadcast (see Figure 1). Other ways of communicating include text chat, URL sharing, voting and mood indicators. All meetings are recorded, and all interactions are logged for research purposes. Usually, data generated by public meetings is published or private data is anonymised. The meeting replay can be browsed by clicking on each participant's name (see Figure 2), and edited or annotated. The minutes of meetings are made available to the meeting bookers, with all interactions logged, together with a visual representation of the meeting, including the chat logs, the duration of broadcasts and attendance maps, showing the

unique IPs logged in the live FlashMeeting plotted on a world map. Users are encouraged to syndicate some of their meetings and share them with the world to contribute to the culture of open content. Syndicated meetings appear in a folksonomy of keywords, added by the meeting bookers.



Figure 1. A mock-up example of a live FlashMeeting and its replay



Figure 2. A mock-up example of a FlashMeeting replay

We report on a quantitative analysis of the user logs denoting meeting attendance to visualise the tool use. The tool has been released in the learning environment of LabSpace in October 2006. Currently, 518 meetings have been booked on the LabSpace – FlashMeeting server. 384 meetings were attended, while 287 meetings did not include the word ‘test’ in the title or keywords of the meeting details. Test meetings are not observed as they are not naturalistic meetings with the goal of communicating and knowledge transferring. While during the first few months, FlashMeeting was used by two communities initially, it is now used by established communities, holding events in regular temporal intervals. Figure 3 shows the server load, by representing the meetings booked in a week towards the end of the first month of its existence (29/10/06–04/11/06), representing 12 bookings made on Monday and Tuesday of that week. Figure 4 represents 24 meetings booked recently (20/05/07–26/05/07), which is double than the bookings shown in Figure 3, noting an increase in the number of participants. Simultaneous meetings are portrayed with different colours.

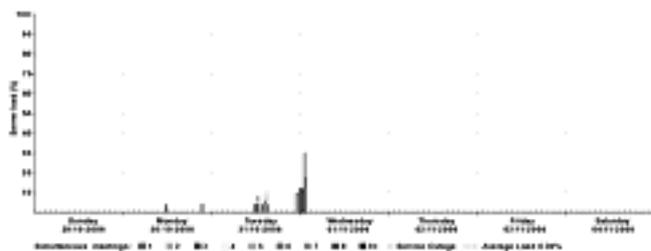


Figure 3. The FlashMeeting server load during the week (29 October 2006–4 November 2006)

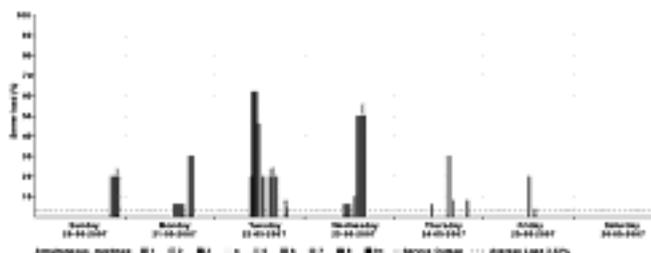


Figure 4. The FlashMeeting server load during the week (20 May 2007–26 May 2007)

A range of communities communicate via videoconferencing in LabSpace; EU project participants, academics teaching elearning courses, elearning professionals, organisations offering peer-to-peer counselling and others. The participation in the community, i.e. how many attendees per meeting and how many meetings held by a specific community in combination with meeting linear visualisations and attendance maps (2) may give some insights into what kind of events are held in an open learning environment.

We extend the logs visualisation approach to show the activity noted by a number of communities using FlashMeeting in different ways. Virtual lectures, web-casts of physical lectures, presentations and others (1).

Virtual lecture

Patterns of interaction include the teacher broadcasting via the audio-visual channel, while the students communicate via text chat. In Figure 5, we can see the linear representation of the teacher (in brown colour) broadcasting for most of the time, with many chat messages exchanged (small red lines).

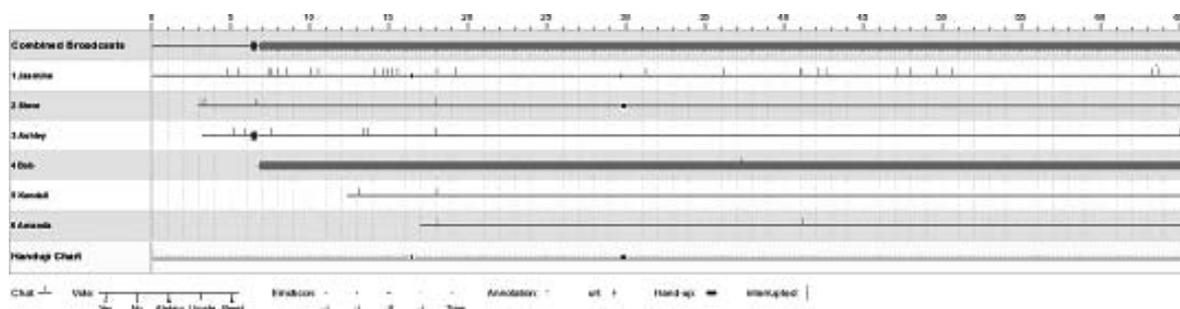


Figure 5. The linear representation of a video lecture, showing the broadcast by 2 participants (blue and brown) and the chat messages exchanged on the timeline (small red lines)

The world map below shows activity in North America, with 6 attendees in this meeting:

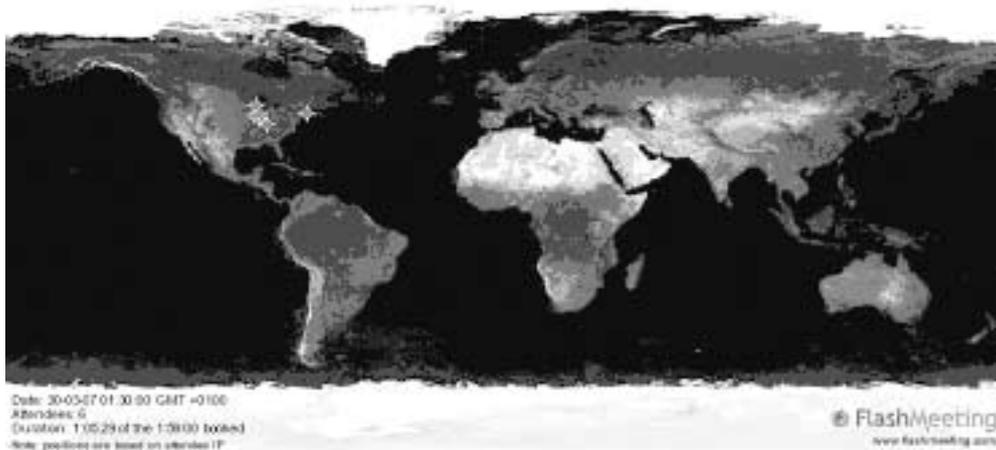


Figure 6. The map representing 6 attendees located in North America

This community is moderated by a teacher who books the meetings. From November 2006 until the present, 11 events have taken place, with 1 to 9 attendees per meeting, and a mean average of 5.

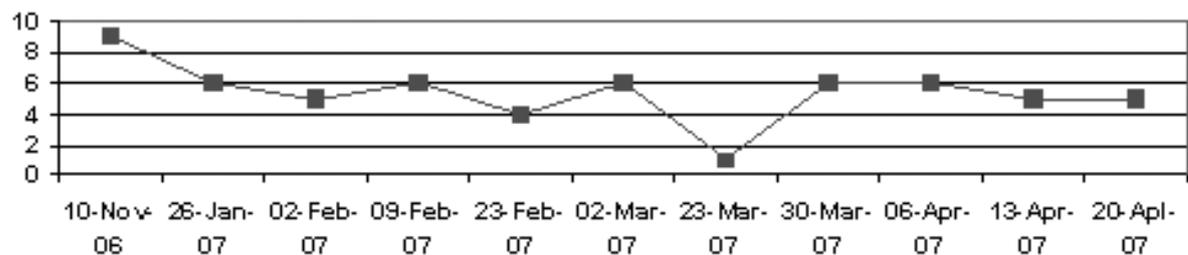


Figure 7. The community activity, showing the number of attendees and the number of events on a timeline (November 2006–April 2007)

Web-cast: recording physical lectures or presentations

During a 2-month period, another group from a Polish University uses FlashMeeting to record physical lectures on Computer Networks. Interestingly, they have the camera pointed at the projected slides they present.

The linear diagram of the meeting shows one attendee broadcasting for 2 consecutive temporal intervals and no other communication channels used. Clearly, the use of the tool is for recording a physical event.

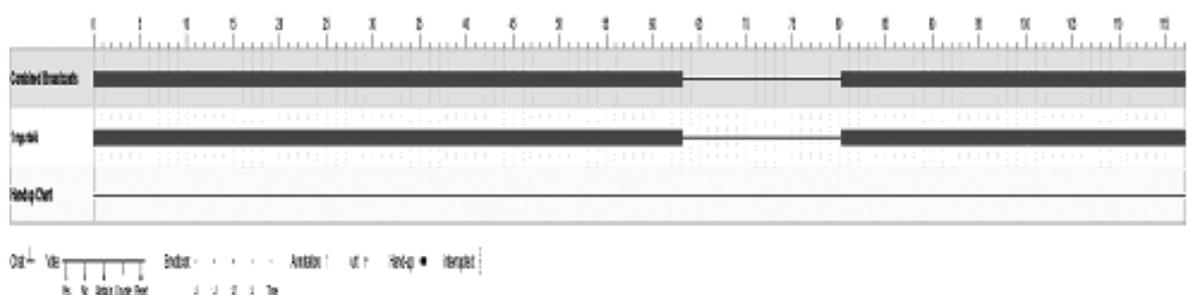


Figure 8. The linear representation of a web-cast, showing the broadcast by 1 participant in two distinct intervals

The world map again shows one attendant:

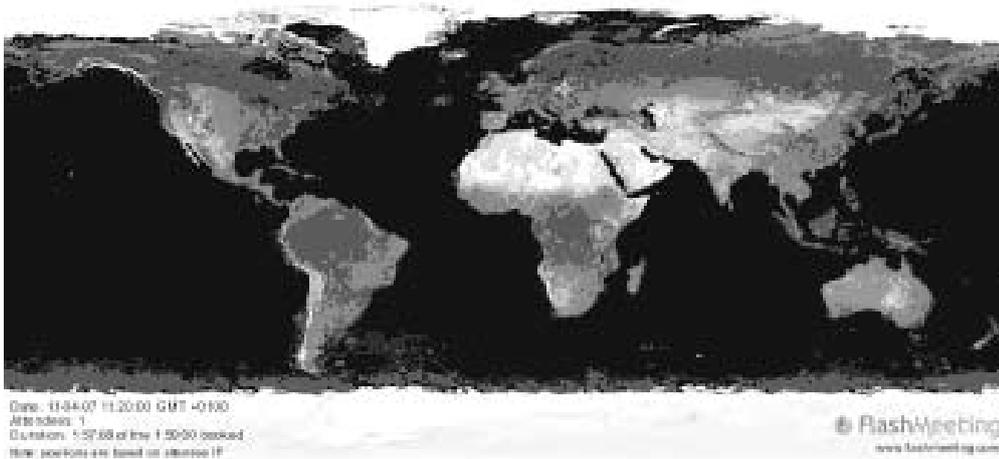


Figure 9. The map representing 1 attendee located in Europe

The attendance visualisation shows a series of 6 events, with 2 in the beginning and then 1 attendee:

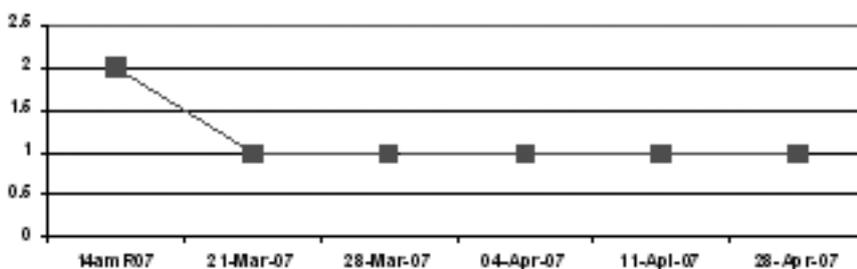


Figure 10. The activity visualisation shows 6 events and 1 attendee per meeting

Peer-to-peer meeting

This series of project meetings called 'Let's talk Architecture' are held by a community of academics in different parts of Europe.

The following example shows 2 participants using the audiovisual channel (in green and brown) and the same or other 18 participants exchanging chat messages (the thin red lines).

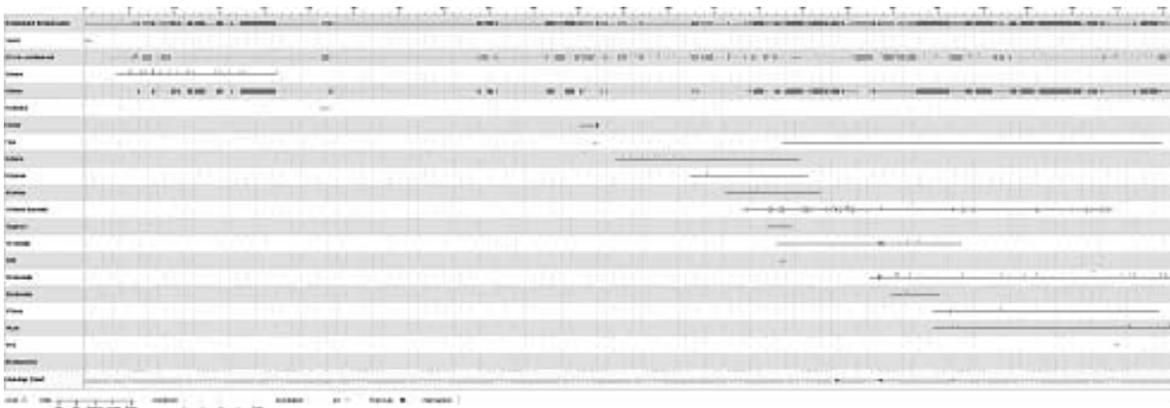


Figure 11. The linear representation of a peer-to-peer event, showing 2 participants the audiovisual channels and many chat messages exchanged

The world map shows activity in different parts of Europe:

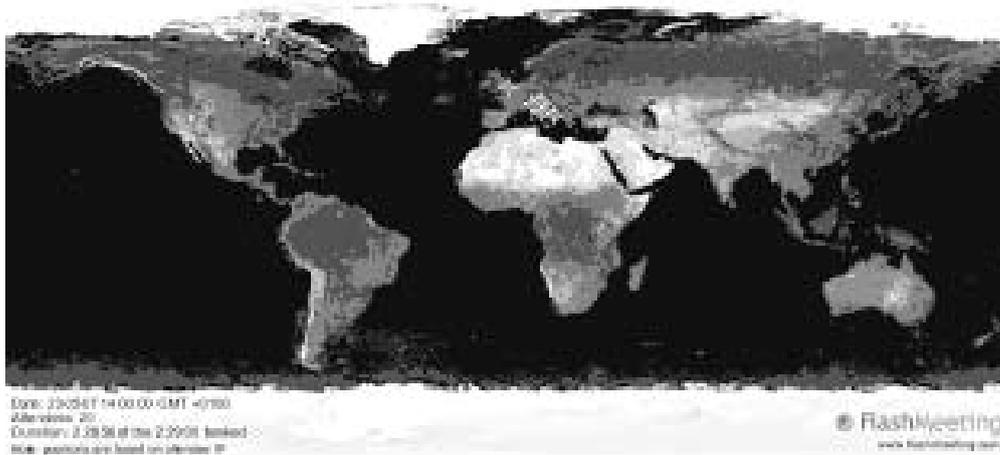


Figure 12. The map representing 20 attendees located in different parts of Europe

The community activity diagram shows 9 events from February 2007 to present, with a mean average of 6 attendees per meeting (2 – 20 attendees). There is a clear upward trend in the number of attendees, and a stability in terms of number of events.

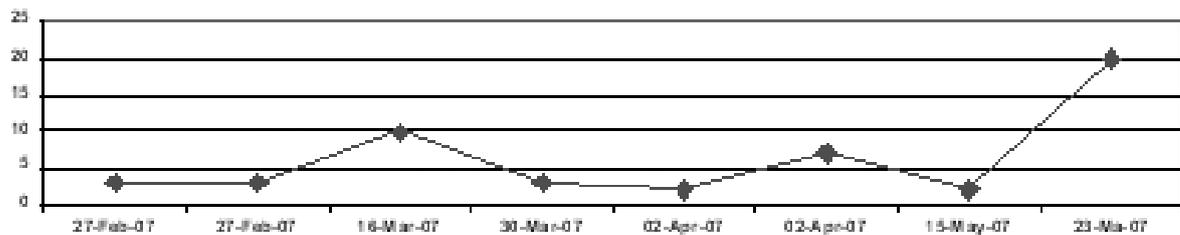


Figure 13. The community activity diagram shows 9 events from 2–20 attendees

Conclusions

These visualisations show on the one hand the type of event created with FlashMeeting, such as web-cast, virtual lecture and peer-to-peer meetings, and in combination with attendance data over a time period can indicate the activity of a virtual community using FlashMeeting in open learning contexts, such as communities hosted in LabSpace. There is an upward trend in the number of meeting attendees

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Knowledge mapping for open sensemaking communities

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Abstract

By analogy to cartographic representations of spatial worlds, Knowledge Maps provide an ‘aerial view’ of a topic by highlighting key elements and connections. Moreover, just as spatial maps simplify the world and can fuel controversy, maps of conceptual worlds provide vehicles for summarising and negotiating meaning. In conjunction with the UK Open University’s Open Educational Resources OpenLearn project, we are investigating the role of such maps for both learners and educators to share – and debate – interpretations of OERs. In this brief update, we describe how a mapping tool (Compendium) has been integrated with OpenLearn’s elearning platform (Moodle) in order to support tasks such as concept analysis, problem-solving, literature review, learning path planning, argument analysis and OER design.

Seeking coherent patterns in an ambiguous information ocean

OpenLearn (www.open.ac.uk/openlearn) is the UK Open University’s Open Educational Resources project, publishing thousands of hours of distance learning materials on the Web for free access and remixing under a Creative Commons license. Designed originally for students paying for tutor- and peer-supported distance learning, the materials are structured from the start to promote critical reflection on the part of the learner. In an open learning context, however, learners do not have ready access to an expert tutor or cohort of peers, and may be drawing on diverse other OERs, blogs, wikis, newsfeeds and so forth, some of which may be superior, complementary, contradictory or of dubious authority. What support for managing this information ocean can we provide in the learning environment in which our OERs are embedded, in order to move learners towards knowledge construction and negotiation? Users need intuitive, powerful tools to manage, share, analyse and track information, ideas, arguments and the connections between them.

Our specific concern within OpenLearn is to investigate support for what we call Open Sensemaking Communities (www.kmi.open.ac.uk/projects/osc – Buckingham Shum, 2005), a concept we are using to investigate the next step after publishing OERs, namely, designing for sensemaking: embedding OERs in an environment that supports end-users (both learners and educators) in engaging more deeply with the material and with each other in self-organising communities of interest. The focus on (sense)(making) reflects our perspective on giving shape and form to interpretations, and the individuals/communities articulating them, after Weick (1995):

'Sensemaking is about such things as placement of items into frameworks, comprehending, redressing surprise, constructing meaning, interacting in pursuit of mutual understanding, and patterning.' (Weick, 1995, p.6)

We propose that a primary challenge is to assist self-organising learners and educators in assessing, extending and contesting OERs. This requires access not only to the text, but to the context (e.g. annotations, argumentation, and the people behind them). This rationale shapes the selection of the software tools that we are evolving, which are designed to make visible and manipulable the connections between ideas, and between the people behind them. The focus of this paper is on mapping conceptual networks, although we touch briefly on social networks at the end.

Knowledge mapping

By analogy to cartographic representations of spatial worlds, Knowledge Maps (Okada et al, 2008) provide an 'aerial view' of a topic by highlighting key elements and connections. Moreover, just as spatial maps simplify the world and can fuel controversy, maps of conceptual worlds provide vehicles for summarising and negotiating meaning. There is extensive empirical evidence from the learning sciences on the value of Mind Maps and Concept Maps in promoting meaningful learning about a domain. In recent years, there has been growing interest in the pedagogical affordances of discourse-oriented mapping techniques that scaffold deliberations in a structured way, under the headings of Dialogue Maps and Argument Maps (Andriessen et al, 2003; Kirschner et al, 2003; Conklin, 2006).

Building on this foundation, we have integrated knowledge mapping functionality into the OpenLearn platform, the open source Moodle system (<http://moodle.org>). The OU's Compendium tool (<http://compendium.open.ac.uk>) provides a visual user interface for users (e.g. learners, educators or software developers) to cluster, connect and tag icons representing issues, ideas, concepts, arguments, websites or any media document. They can use this represent their personal reflections as they study or work on a problem, or share their maps with others. Knowledge maps can be useful as a summary of a topic, or to share a learning path through the maze of the Web. Text, images, URLs, documents and ideas can be dragged and dropped into a map and structured. In addition to Compendium, we have also released open source the code enabling system administrators to add the Knowledge Map block to their own Moodle installations, with the facilities to upload and download maps linked to a given course (<http://compendium.open.ac.uk/openlearn/moodleblock.html>).

Space precludes illustrations of all the different genres of map that can be created in Compendium, but examples are provided in the Knowledge Mapping QuickStart Guide (<http://openlearn.open.ac.uk/course/view.php?name=KM>) and in the Open Sensemaking Communities Phase 1 report (http://kmi.open.ac.uk/projects/osc/docs/Phase1_Report.pdf).

Adoption patterns

Diagnostic reports of Compendium downloads, and map uploads/downloads are generated as part of the Moodle Knowledge Map block. In the nine months from our October 2006 launch, there were 1179 downloads of the Compendium tool, in part from the different internal OU communities as shown below, but largely from elsewhere.

Non OU	@open.ac.uk	@student.open.ac.uk	@tutor.open.ac.uk	Total
839	116	198	17	1179

We find this an encouraging level of interest in the tool, although given the established role of concept and mindmapping tools within learning and business,

we are not surprised that a free tool offered by the OU (which has been quite widely blogged) should prove popular. What we are not yet seeing is large scale uploading of maps, with only 118 maps, largely from OU staff and OpenLearn project members. The relatively low level of public activity (mirrored with other tools) suggests that while technically literate open learners may be relatively quick to test personal tools they can install on their own machines (downloads of Compendium), there is a further threshold to cross before they are ready to engage in public behaviour of any sort. We do not find this surprising. It takes time for learners to digest new material, build confidence with new tools, and find peers.

An open research question that we will be investigating is to assess firstly, the extent to which individuals are using Compendium privately (the critical first step), and secondly, when we remove the need to install software, and make it easier to embed interactive maps within websites, this promotes map creation and sharing by learners and educators (see ongoing work, below). The willingness of web users to add FaceBook applications, HTML snippets and other JavaScript widgets to their websites points to a cost-benefit threshold that non-technical users can and do choose to negotiate.

Ongoing work

As we move into the second year of OpenLearn, we are working on a number of new developments:

- OpenLearn knowledge maps can be integrated with FlashMeeting (Okada, Tomadaki, Buckingham Shum & Scott, 2007), which provides replayable web videoconferencing and social software tools, moving us towards integrated socio-semantic networks.
- Our first year's work focused on maps for learners. We are now considering how OER providers could benefit from Compendium, with attention on visual templates for Learning Design Patterns (Conole, 2008). Feedback to date indicates educator interest in these as OERs in their own right.
- We will be releasing a web-centric 'knowledge map exchange' which will enable direct annotation of maps, plus search and visualisation tools across multiple maps from multiple authors.

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MSG Instant Messenger: social presence and location for the ‘ad hoc learning experience’

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Abstract

‘Elearning2.0’ promises to harness the power of three of today’s most disruptive technologies: social software, elearning, and Web2.0. Our own work in this disruptive space takes as a starting premise that social networking is critical for learning: finding the right person can be more important than ‘scouring the web for an answer’, particularly when hand-holding or other explanatory services are required. Moreover, it ‘feels good’ to know that others are around! With this in mind, we have taken our older BuddySpace tool and created a new tool we call MSG, which is simpler, available as Open Source, and integrates cleanly with a number of other services, including Moodle and Google Maps.

Introduction: disruptive technologies for the learner

‘Elearning2.0’ promises to harness the power of three of today’s most disruptive technologies: social software, elearning, and Web2.0. Our own work in this disruptive space takes as a starting premise that social networking is critical for learning: finding the right person can be more important than ‘scouring the web for an answer’, particularly when hand-holding or other explanatory services are required. Moreover, as Nardi (2001), Whitelock et al. (2000) and others have noted, it ‘feels good’ to know that others are around! With this in mind, we have taken our older BuddySpace tool (which provided instant messaging and maps, but was found by testers to be ‘over-geek-ish’ to use), and created a new tool we call MSG, which is simpler, available as Open Source, and integrates cleanly with a number of other services, including Moodle and Google Maps.

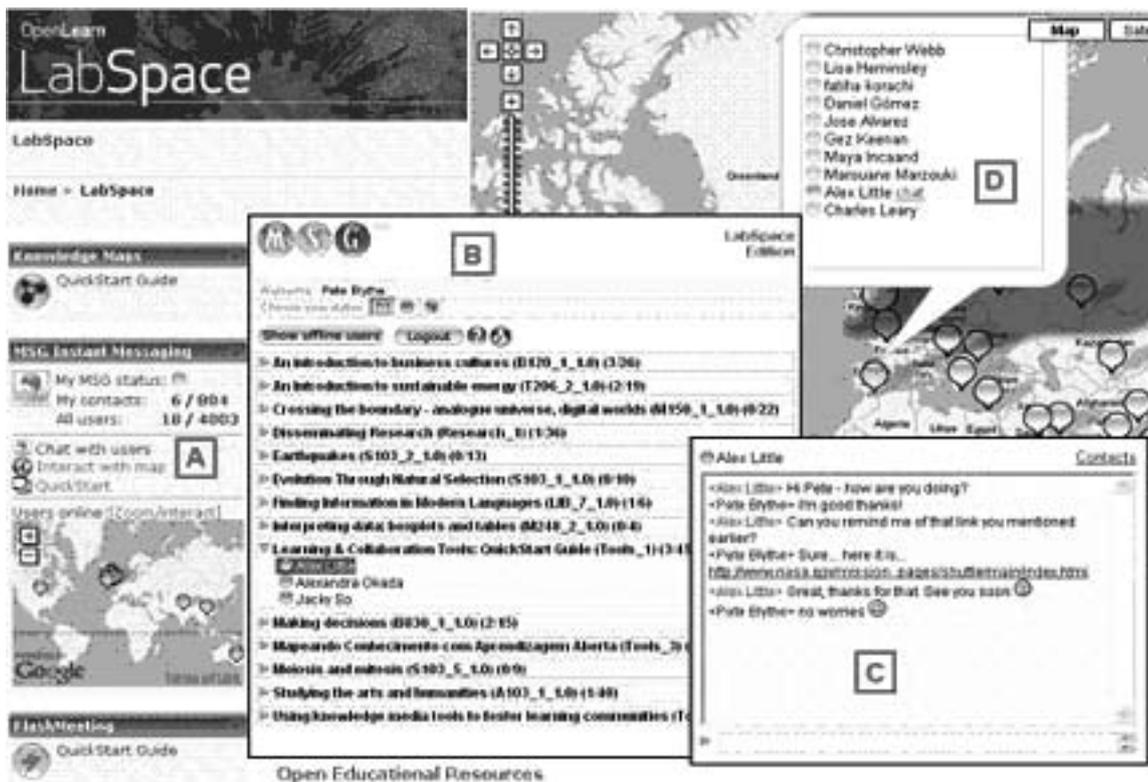


Figure 1. MSG Instant Messenger embedded in LabSpace. (A) The persistent Moodle ‘Block’ that shows personal status, personal contacts, and all users currently logged in. (B) The MSG messenger itself runs in any browser, with standard browser tools hidden, and allows setting of ‘status’ via the three lights at the top, listing of group members and 1–1 chat after clicking on a user name, as shown in (C). Geographical location (using Google Maps API) of users’ contacts is the latest new feature (D)

The attributes that make MSG distinctive can be summarised as follows:

- It runs directly in a web browser environment, using AJAX, so no installation is required
- It provides only the functionality that covers more than 90% of what our original BuddySpacers actually used: simple ‘online/away/do-not-disturb’ settings, lists of users, and click-to-chat. We have deliberately restricted the functionality in the interests of simplicity.
- It implements a ‘single-sign-on’ capability so that users who log in to OpenLearn are automatically logged in to MSG.
- It enables ‘presence everywhere’: any user’s ‘presence status light’ can be embedded within any other part of OpenLearn, such as a single comment in a discussion forum.
- It includes an optional ‘desktop notification widget’ which allows users to receive a compact message alert in their system taskbar.

Where we know a user’s location (from their stored user profile) and have that user’s agreement, MSG Presence Maps (built on the Google Maps API) allows large-scale zoomable displays of online users’ locations: the locations are automatically clustered in different sizes depending on the zoom factor, preserving the one-click-to-chat feature.

Benefits, experiences, and future

One of the key aims of OpenLearn is to ‘explore how best to make (high quality learning materials) freely accessible in an international web-based open content environment’ (OpenLearn project proposal) and in doing so ‘encourage the creation of non-formal collaborative learning communities’. Instant messaging (IM) is one of the most widely used social networking tools, so integrating instant messaging into OpenLearn, with its potential for community building, peer-to-peer and collaborative learning, seemed natural. There is a huge range of instant messaging tools available (e.g. AIM, MSN and GTalk). However they do not fit the bill for messaging in an educational context, where our background research on BuddySpace suggested that educational users liked the power of IM tools, but preferred the security, familiarity and ‘feel-good’ factor of an IM tool associated with an educational resource provider. MSG offers the openness and interoperability required to embed IM into OpenLearn.

MSG also offers presence mapping, something not provided by any of the mainstream IM providers, through the Google maps API. The rationale for creating the presence maps is rooted in our prior analysis of Open University discussion forums in which we found that nearly 20% of the first 1000 postings were related to finding out whether or not there were other students in the same geographical area (Vogiazou et al, 2005).

Since the launch of OpenLearn in October 2006 to date (mid-May 2007), over 4000 users are now registered in MSG (by registering on LabSpace and enrolling on a course), and there have been several hundred chat sessions. Analysis of this usage (messages are recorded anonymously) shows the vast majority of the content of MSG chat to be what we would call ‘meta-level-chat’, i.e. that the chat is about the MSG tool itself rather than the OpenLearn content and materials (‘object-level-chat’).

This is entirely as expected, since there are two central problems that preclude object-level-chat:

1. Motivation: There is neither overarching guidance nor any self-evident motive that inherently embeds MSG interactions into any of the educational resources (e.g. ‘now do activity X which involves synchronous chat’). Thus, chat interactions can only occur spontaneously and for no obvious mutual end.
2. Critical mass: At any random moment, there is no one else ‘around’ in MSG, because there is not a sufficient number of users right now. Thus, even if there were anything of direct educational relevance to discuss, there is no one to discuss it with.

We feel strongly that with the recent addition of a ‘front-of-house’ presence map (item (A) in Figure 1), users will increasingly become interested in opportunistic chat and peer presence discovery (as with other instant messaging services). This in turn will facilitate what is in effect an ad hoc learning experience: not unlike what happens throughout our lives! But people don’t come to the OU or OpenLearn for fun: indeed we need to do more than just ‘throw a fun tool into the mix and see what happens’! Specifically addressing the motivation and critical mass problems mentioned above is something we intend to do in the next phase of the project, which will give us several areas for investigation, including:

- Will adding MSG presence maps enhance take up/usage? Will the chat messages begin to move from meta-level-chat to object-level-chat?
- Will the inclusion of MSG into the LearningSpace, which has much higher visitor count, have a marked effect on usage?
- How important is location to distance learners?
- How do the benefits of location awareness trade off against privacy concerns?

We will also begin to explore the benefits of integration with FlashMeeting, the voice/video group interaction tool that is also being made available across all of OpenLearn, and use the combination of social software tools provided in OpenLearn to gain a better understanding of the role of informal and ad hoc interactions in a large-scale learning environment.

Creating accessible SCORM content from OpenLearn material

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Abstract

This presentation shows how OpenLearn material has been used to create accessible SCORM learning objects that can be delivered using a third party virtual learning environment (dotLRN). This work was carried out as a part of a European Union project called ALPE. The activity of adapting the OpenLearn material has helped the VLE developers further understand the activity of creating accessible learning material and help inform the development of the VLE.

Introduction

This presentation illustrates how OpenLearn materials have been used to create a set of standards-based accessible SCORM learning objects that can be used within a virtual learning environment called dotLRN. The dotLRN is used within the Spanish National University for Distance Education (UNED), the Spanish equivalent to The Open University.

The following section describes why the OpenLearn material was chosen. This is followed by a description of some of the process used to create the learning material. An outline of changes made to the material is also presented. The final section presents what has been learnt.

Why use OpenLearn?

The ALPE project is a consortium comprising of the Spanish National University for Distance Education (UNED), The Open University in the UK, a well known Spanish consultancy firm (Soluziona/Indra), and a non-profit organisation in Greece (PAB) that supports people with visual impairments. The aim of ALPE is to provide assistance to private and public institutions to enable them to create accessible learning material. When establishing the project it was decided to create a series of exemplar materials to further understand some of the difficulties inherent in creating accessible content.

This activity was perceived to have several benefits: it allowed a further understanding of the current advantages and shortcomings of the virtual learning environment used by UNED (dotLRN) to be understood, permitted a detailed exploration into the pragmatics of developing accessible materials and the surrounding legislative frameworks, and allowed the Open University Accessible Educational Media (AEM) team to further inform the accessibility dimension of the OpenLearn content.

The dotLRN VLE provides a standards compliant SCORM player. SCORM is an abbreviation for Sharable Content Object Reference Model. Originally developed by an office from the US department of defence, SCORM is a recognised elearning standard that is used within many different VLE systems, including Moodle.

Content development process

The structure of the OpenLearn courses is mostly described using a single XML file. This single file is divided into separate sections, chapters and paragraphs which then hold the 'words' of the learning material. This file also contains additional information such as a title, a description and a set of useful keywords to describe a course. Links to other important resources such as images, videos and transcripts are also included. One of the key advantages of storing the majority of the content in such a way is that it offers content developers an opportunity to manipulate the content using a computer program allowing them to generate new material to suit their precise needs.

A SCORM course can be described as a learning object: an individual unit of learning that can be combined with other units to create a course. The structure of a SCORM learning object has some resemblance to the OpenLearn content that can be downloaded from the LabSpace area. SCORM and OpenLearn 'learning objects' both use a zip file to aggregate different resources together (such as images, audio clips, PDF files and videos) and both utilise XML but in different ways. Whilst the OpenLearn learning object stores the majority of the content and structure in a single file a SCORM learning object, on the other hand, contains an XML file that can be thought of as a simpler 'table of contents'. This XML file (known as a manifest file) stores internal references to HTML pages or other related resources found with same zip file

Conversion from the OpenLearn to the SCORM format required four steps, (1) the extraction of content from the OpenLearn XML file to create a stand-alone web-pages, (2) making a 'table of contents' XML structure that reference the newly created XML pages, (3) creation of appropriate course metadata in the SCORM format and (4) combining together all the resources and files (including the important table of contents) into a single unit.

Each OpenLearn course zip file contains a preview mechanism that allows any changes to an OpenLearn XML file to be viewed as a set of web-pages. The provision of this mechanism, primarily in the form of an XSLT transform, accelerated the SCORM conversion process. When an OpenLearn editor or 'remixer' wishes to preview changes to the OpenLearn XML a user is presented with a set of web pages by using the preview system. Each web page contains its own navigation system, allowing different pages to be viewed. SCORM does not need the integrated navigation system since each learning environment that offers SCORM usually has its own content navigation mechanism. The first and perhaps most important stage of the conversion activity was to remove the navigation mechanism by creating a new version of the preview mechanism.

A number of additional modifications to the XSLT transform that were made to create a set of web pages needed by the ALPE project. These are summarised as follows:

1. Production of XHTML 4.0 compliant pages.
2. Reference of a single style sheet (CSS) file for both main content and pop-up windows.
3. Removal of selective Javascript code.
4. Using of semantic mark-up.

The table of contents and the metadata used to describe the learning object were created using a tool called RELOAD. RELOAD is a packaging and learning object editing tool that is considered to be many as a reference model implementation of a number of different international learning technology standards. All the generated web pages were loaded into RELOAD and a table of contents 'organisation' was built by hand (although this activity could have been mechanised with the development of an additional OpenLearn to 'table of contents' XSLT transform). Metadata information (such as the title, description and keywords) was extracted from OpenLearn XML file by hand and attached to the table

of contents manifest file, enabling the new material to be searched for if stored within a learning object repository.

When all these items were in place, a new SCORM learning object was created by packaging these components into a single zip file. This zip file was then transferred to the dotLRN VLE system for testing.

Accessibility enhancements

Since the OpenLearn XML file is the primary source of the content, the accessibility of the end product depends on how complete the original XML data is and the quality of the XSLT transform that generates the resulting web pages.

The modified XSLT placed emphasis on the use of semantic mark-up as opposed to earlier presentation mark-up approaches (using , or emphasis tags rather than , or bold tags). This allows greater control of the presentation of the material using Cascading Style Sheets which in turn assists with maintenance as well as accessibility since more content specific information is presented to assistive technologies such as screen readers.

The OpenLearn XML content makes excellent provision for alternative resources. Each graphic can be given an alternative description that can be used by screen readers. Unnecessary redundancy between the alternative text and corresponding figure headings were removed since unnecessary repetition would disorientate users who access the material through a screen reader. Finally, in some cases, alternative descriptions of images were missing from the original XML source. Where omissions were found, the XML was updated and the new content generated.

Conclusions

The OpenLearn content has proved to be a useful tool for the development of accessibility and learning technology standards expertise throughout the project consortium. As well as understanding how to create accessible learning material, the OpenLearn content has been to understand how the dotLRN VLE could be improved. The material has helped to inform the further development of the VLE's SCORM navigation controls, benefiting a wider community of users.

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Open metadata for open educational resources in an open infrastructure

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Abstract

We believe that the open educational resources movement focuses too much on one of the three important aspects for openness, i.e. open *content*. In order to take full advantage of the open educational resources, attention should also be given to open metadata and standards, so that a truly open infrastructure for learning can be developed. We are heavily involved in research around all three these aspects, *and* in the actual roll-out for diverse learning communities of this infrastructure.

Introduction

This paper focuses on three notions of openness that are crucial for learning:

1. **Open content:** The notion of Open Educational Resources refers to the idea that it should be easy to access and repurpose educational materials.
2. **Open metadata:** Metadata (of content, people, context, actual use, either manually contributed by indexers or automatically generated by software) make it possible to identify relevant resources; open metadata can be harvested and repurposed without the need for manual interventions to set up agreements between participating organisations and individuals.
3. **Open infrastructure:** In such a technical environment, software components can be developed that work together with other components from heterogeneous origins, by publishing the syntax and semantics of the services that these components provide, for instance for access to content or people, or for authoring content or metadata, etc.

In much of the literature on open learning, only the first kind of openness is addressed, with most of the emphasis on access to content, rather than its reuse or repurposing. We believe that, even though open content is important, open metadata and open infrastructures are just as essential for removing barriers to scalable open learning. Indeed, the importance of open metadata is well recognised in for instance the digital library community (<http://www.openarchives.org/>) and open infrastructures enable the web2.0 approach of ‘mash-ups’ that rely on public API’s to a plethora of web services.

Openness at work

In our unit, we address these three levels of openness in a variety of concrete and sometimes large-scale deployments:

In ARIADNE (<http://www.ariadne-eu.org/>), *content* is evolving towards an open Creative Commons licensing scheme. As ARIADNE started more than a decade ago, this requires recontacting the original contributors and working with them to change the original licensing scheme (which predates Creative Commons and made a distinction between different classes of users) towards a Creative Commons one, a rather time-consuming process. The ARIADNE *metadata* are now licensed under an Attribute-Non Commercial Creative Commons license. Indeed, they can be harvested over our open *infrastructure*, using the OAI-PMH protocol (<http://www.openarchives.org/pmh/>) or they can be searched over the SQL interface for federated search (<http://ariadne.cs.kuleuven.ac.be/SqIinterop/free/SQIImplementationsRegistry.jsp>)

Support for RSS as an alternative to OAI-PMH is planned.

As ARIADNE is one of the founding members of the GLOBE alliance of educational repositories (<http://globe-info.org/>), it is no surprise that the GLOBE approach towards openness is very much in line with what was mentioned above for ARIADNE. All GLOBE repositories provide at least a subset of their *metadata* under a creative commons license, again using OAI-PMH and SQL for the *infrastructure*. A common policy has been adopted to evolve towards Creative Commons for the actual resources in the repositories. This is a substantial initiative, with, besides ARIADNE, as founding members NIME (Japan, <http://www.nime.ac.jp/index-e.html>), EDUCATION.AU (AUSTRALIA, <http://www.educationau.edu.au/>), LORNET (Canada, <http://www.lornet.org/>) and MERLOT (USA, <http://www.merlot.org/Home.po>). In 2007, KERIS (Korea, <http://www.keris.or.kr/english/index.html>), LACLO (Latin-America, <http://www.laclo.espol.edu.ec/>) and COSL (USA, with links to the OCW network, <http://cosl.usu.edu/>) have joined. The ambition of GLOBE is to regroup *all* of the world's learning repositories in a global network of (networks of) repositories.

In the MELT initiative (<http://info.melt-project.eu/>), with the involvement of a substantial number of European ministries of education, and focusing on primary and high schools, the European Schoolnet and ARIADNE are collecting *content* and *metadata* from local repositories, set up by the ministries or by commercial providers. Again, the *metadata* are licensed under Creative Commons and made available over a hybrid *infrastructure* that relies on OAI-PMH for harvesting and SQL for federated search – indeed, this infrastructure is linked to GLOBE and thus to ARIADNE. An interesting specific aspect in MELT is that we will be 'enriching' the metadata that describe the resources, by involving expert indexers, as well as folksonomies and tagging by teachers and automated means for metadata generation (<http://ariadne.cs.kuleuven.be/amg>).

MACE focuses on a specific subject area, architecture, and collects a critical mass of high quality resources in this area. MACE focuses on providing flexible and targeted access to these high quality resources. Apart from relying on metadata describing the content, MACE also uses information about the usage of the content to improve the process of finding suitable learning objects. MACE draws on the involvement of professional societies and architecture schools for metadata about the content, including folksonomies and tagging (<http://www.mace-project.eu/>).

A critical issue in many of these initiatives is to develop approaches that enable all the actors to provide value to and derive value from the 'learning commons'. A MELT ministry of education, for instance, may want to rely on the GLOBE infrastructure to enable its own users to have access to a richer variety of resources. Or an ARIADNE user may want to contribute material in order to make it available to colleagues with access to the GLOBE network. Designing the tools that enable different kinds of 'content chains' whereby repurposing of content is made possible at variable levels of granularity remains a challenge (<http://ariadne.cs.kuleuven.be/alocom>).

Conclusions

We believe that the open educational resources movement focuses too much on one of the three important aspects for openness, i.e. open content. In order to take full advantage of the open educational resources, attention should also be given to open metadata and standards, so that a truly open infrastructure for learning can be developed. We are heavily involved in research around all these aspects, and in the actual roll-out for diverse learning communities of this infrastructure.

The Open Learning Object model for the effective reuse of digital educational resources

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Abstract

In this paper we present a model of Open Learning Object (OpenLO) for a greater awareness in the use of LOs by teachers, giving them a more active role in the evolution of educational resources. The OpenLO model extends the concept of reusability, providing pedagogical sustainability. We describe FreeLOms, a Learning Object Management System that implements the proposed OpenLO model. The system has been developed in the framework of the European Project SLOOP, Sharing Learning Objects in an Open Perspective.

The use of LOs at school has often been seen as an opportunity. In fact, the description of LOs through metadata facilitates the search for didactical materials on the web, and the LO paradigm claims that they can easily be reused through their aggregation; moreover, the adoption of standards that sustain the production of LOs permits the interoperability of didactical resources in different Learning Management Systems.

At the same time it is necessary to consider the doubts raised by the use of LOs in school contexts. Generally, the description of LOs is lacking in pedagogical aspects; for example there are no references to the educational context or to the didactic process in which the learning object can be used. The model of learning resources currently in use does not permit the reuse of learning resources in a constructivist approach (Piaget 1976, Novak 2002). Moreover, the use of standards such as SCORM (ADL 2004), on the one hand facilitates the interoperability of learning resources but, on the other, it complicates the task of developing learning objects for the teacher.

In order to achieve the trade-off that can guarantee the transformation of the potential of LOs into real pedagogical benefits, we claim that it is necessary to rethink the concept and role of LOs in the learning processes, with particular focus on the reusability issue, the potential of LOs that has so far appeared particularly disappointing to school operators.

To overcome this problem, we need to rethink the current model of LOs, moving to a new model that we call Open Learning Object (OpenLO).

Starting from Wiley's definition of learning object (Wiley 2000) we define open learning object as 'any open digital resource that can be reused to support learning'. In this definition the term open indicates open content, namely content developed in open format (e.g. Open Document) or content in closed format whose source files are also available (e.g. Adobe Flash). Moreover, our vision of reusability is not simply based on combining LOs but goes beyond this towards a pedagogical concept of reusability in which a LO can evolve to meet specific educational requirements.

The OpenLO model allows users to edit LOs created by different authors, and customise the LOs according to their own pedagogical needs; in addition, communities of educational professionals can work on the same LO and contribute to its collaborative evolution at content level. Finally, the replication of this process of adaptation of LOs at content level over time is a mechanism that can provide pedagogical sustainability of the LOs.

In the implementation of the OpenLO model, and in the definition of educational methodologies based on this model, it is relevant to focus on three main aspects:

- changing the life cycle of Learning Objects and consequently the methodologies for producing these resources
- assigning a dynamic role to metadata, which should evolve in parallel with the life of the learning object.
- moving from current Learning Object Repositories (LOR) to innovative Learning Object Management Systems (LOMS).

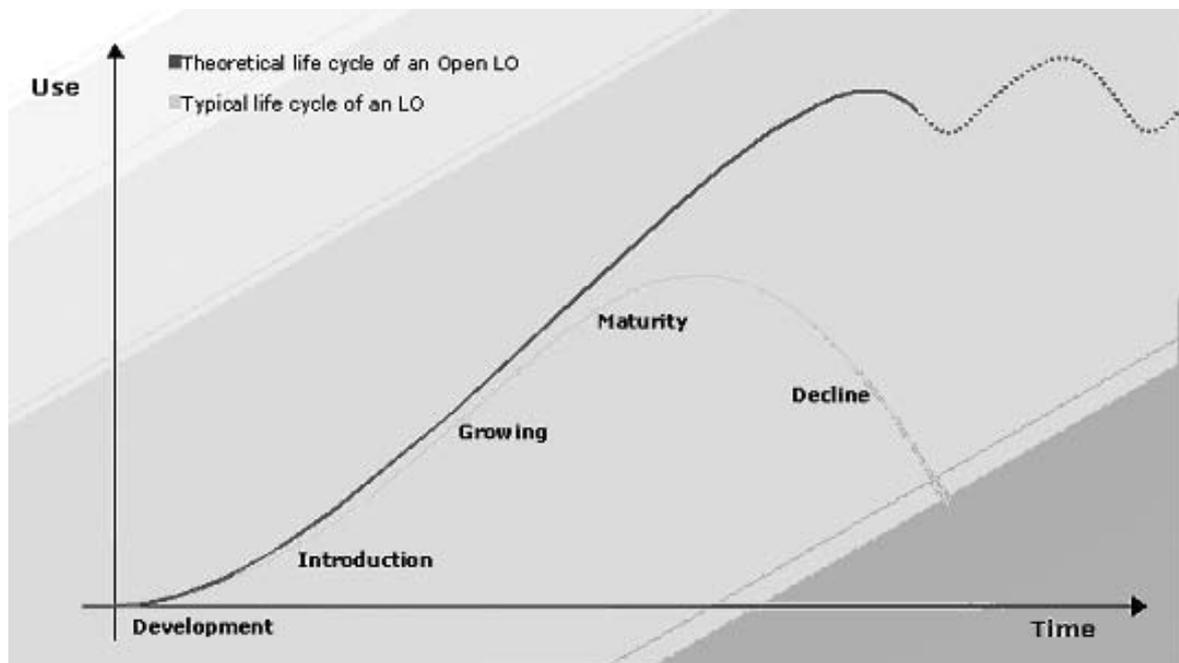


Figure 1. Comparison of the evolving life cycles of an LO and an OpenLO

The theoretical comparison of the lifecycle of an LO with the lifecycle of an OpenLO demonstrates that the latter never reaches obsolescence, since an OpenLO in its mature stage could undergo several phases of elaboration, thus reducing the risks of obsolescence and overcoming the limitations of a closed LO (Figure 1).

In order to cope with the development of an OpenLO, that is an intrinsic dynamic resource, we need to go beyond the methodologies of waterfall development presently used in LOs production moving towards the recent agile methodologies.

Considering the benefits of the latter methodologies in the management of many open source software projects, we expect that the adoption of the same methodologies in the collaborative production of LOs can bring about similar improvements.

The OpenLO model reconsiders the role and opportunities offered by the use of LO metadata. More and more often metadata are not appreciated except for their capability to improve learning object search. In the OpenLO model, metadata assume a key role as essential tools in supporting the evolution of learning resources. This role was

also assigned to metadata by the IEEE learning technology standard committee in the definition of the IEEE Lom Specification (IEEE 2002).

According to this standard the LifeCycle and MetaMetadata sections can be used to guide the evolution of the resource, specifying motivations and information regarding this evolution.

Metadata, from this point of view, act as descriptors of the evolving process of the resources. These considerations reveal the need for new tools which can treat metadata not only as static data but as information in constant evolution, thus supporting effectively the development of educational resources.

Traditional Learning Object Repositories are not sufficient to implement the OpenLO model, since they do not manage the evolution of open contents; so we need new environments that we have called Learning Object Management Systems (LOMS).

LOMS must have innovative features to manage learning objects: they have to support versioning mechanisms for LOs, both metadata and content; they must provide an environment for sharing resources and tools to support collaborative work; they must support elearning standards to guarantee interoperability between learning environments; and, finally, they should permit the development of learning resources following an open licence (e.g. creative commons) in order to guarantee their editing and their effective reuse.

In the framework of the EU-funded SLOOP Project, Sharing Learning Objects in an Open perspective (Masseroni, Ravotto 2005), we have developed FreeLOms (Gentile et al. 2006), a Learning Object Management System aiming to manage learning objects according to the OpenLO model presented in this paper.

In conclusion, the definition of the OpenLO model permits an acceleration in the following fundamental educational processes:

- the involvement of teachers in a more active role in the production of LOs; this permits them to improve didactic strategies based on knowledge building rather than on the use of units of learning
- the creation of a community of practice that adopts the concept of OpenLO, in order to promote this technology within a community
- the activation of collaborative processes in the authoring phase of LOs and above all during the following steps
- the involvement of students in the production of LOs, in order to enforce learning processes based on constructivism.

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Framing for sustainability: identifying values within open content provision

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Abstract

The way in which open content is sustained will depend in part on the values of those in the open content movement and how these values are shared with users and the academic community. Work is in progress to investigate the discourses embedded in the open content movement. It aims to discuss the potential of Discourse Analysis for identifying values within open content provision that frame for sustainability. The intention is to bring into evidence the most dominant discourses that discursively construct the values that an open content initiative seeks to sustain. Embedded in the processes of production and delivery of OERs are discourses that evoke specific agendas. The ways these discourses are drawn upon construe the social practices in the open content movement.

Proposed work

In the initial work the focus is on the discourse of widening participation and explore how it is constituted by various other discourses, such as the media discourse and the social inclusion discourse. In order to support this claim, it is proposed to analyse sample data from two OER initiatives, drawing on specific principles of Discourse Analysis from a Foucauldian perspective (Foucault, 1979) and a Critical Discourse Analysis one (CDA – Fairclough, 2000).

Discourse Analysis – a brief introduction

Discourse Analysis (from now on DA) is a truly interdisciplinary approach. It offers routes into the studies of meanings, investigating the dialogues that constitute social action and offering a set of methods and theories for investigating language in use (Wetherell, Taylor and Yates, 2001). It looks for patterns of language use (and semiotics) in large contexts, such as those of a 'society' or 'culture' (Taylor, 2001).

The definition of 'discourse' can vary within different domains: linguistics, psychology, health and social care, history, philosophy, politics, education, among many others. In this study discourse is seen as the institutionalised use of language. Discourses are embedded in written texts, spoken language, audio and visual images. Discourse is not purely a linguistic concept; it is about language and practice (Hall, 2001). Discourses are historicised and are imbricated in the particular ways in which certain subjects are talked about and acted upon by individuals. Discourses shape the practices that construe shared meanings within a social group.

The two themes explored in the analysis of the sample data in relation to the discourses are 'knowledge' and 'power' (Foucault, 1996). I use the principle of interdiscursivity to explore the relations of some of the discourses that are embedded in the discourse of widening participation of the open content movement in order to illustrate how they interplay to construct the social practices that regulate such a domain in education.

'Interdiscursivity' is a matter of how a discourse is constituted through a combination of elements of others discourses (Fairclough, 2000). Discourses are fluid and mobile. They constantly overlap and merge with one another. Interdiscursivity is what allows similar discourses to circulate in different domains of social life, creating new discursive practices and meanings.

Widening Participation: an example of a dominant discourse of the open content movement

Initial analysis indicates how dominant the discourse of widening participation is in the open content movement. Most importantly, though, is how this discourse interacts with other discourses and shapes the practices around OERs. The media discourse interacts with the widening participation discourse in an interdiscursive relation. The media discourse is a powerful discourse because of its uniquely influential and formative position in contemporary society (Fairclough, 1995). Fairclough claims that understanding how relations are constructed in the media between audiences and those who dominate the economy, politics and culture (and in the open content case, the academia), is an important part of a general understanding of relations of power and domination in contemporary societies. Knowledge and power are key-words in this analysis. As well as relating to the media discourse they relate to the social inclusion discourse. The latter holds the premise that only the fit for purpose can be socially included: the ones who have the knowledge that brings the power to be productive in society and to provoke changes.

Conclusion – how to frame for sustainability in this context?

The aim to look into the different discourses that circulate in the open content movement is to explore how it is being shaped by its discursive practices in an often unproblematised way. The widening participation discourse and its many other constitutive discourses are working together and establishing the discursive practices that help shaping the field, at the same time being shaped by them. However, the logic widening participation – knowledge acquisition – social inclusion is much more complex than it seems. It involves making available to individuals what they need and not necessarily what one thinks they might need. It involves incessant dialogue between providers and the users and more research into how to make such dialogues possible.

Sustainability of OERs is seen as the ability of a project to continue its operations and to meet its goals (Wiley, 2000). In such case, the exploration of the embedded discourses in the open content movement is vital to a better understanding of the underlying issues and agendas that interplay in this context. The exploration of such discourses allows for the possibility of a critical reflection on the sustainability plans of open content initiatives and how the framing for these plans could effectively mirror their main values.

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‘Bridging the abyss’: open content to meaningful learning

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Abstract

The open content model has the ability to enhance the learning environment of many individuals. In its current level of deployment, however, does it necessarily support ‘meaningful learning’? There are several interlinked issues related to completeness of content, granularity, copyright, offline access, use, etc., that sometimes limit the effectiveness of material provided. Therefore in order to support the learner we need to understand and support their individual learning environment, which is often offline. Furthermore, we need to understand the learner’s limitations in terms of content selection, access, use and management of their personal knowledge silos on their desktop.

Introduction

Global Library Services Network (GLSN) is actively involved in the creation, deployment and management of ‘digital collections’ to remote communities in support of meaningful and life-long learning. We define remote in terms of geography, culture, language and telecommunications. One might think that the growing availability of ‘open content’ would make this an easy task, however our initial trials show this to be incorrect. Many of the current models for open content are not flexible enough to meet the demands of supporting ‘meaningful learning’, in particular when we focus on the considerable body of potential learners who do not have effective telecommunications infrastructure to support effective online access.

Personal Learning Centre

In order to investigate the individual’s learning environment we undertook a very brief review of the current technology tools available on the desktop, that could assist learners in their tasks associated with personal knowledge management. There was nothing available that offered integrated support for knowledge management within a learners personal domain that was available for use online and offline.

We therefore decided to develop a technology platform using, where possible, open source components that would at least support our further trials relates to a learners use and management of personal information in support of life long learning. The infrastructure developed by GLSN is built on a mixture of open source and managed source products with a view to it being deployed at no charge to the individual’s desktop. It is referred to as a Personal Learning Centre and offers a range of functionality including support for:

- full text search
- context search

- citation management
- multilingual thesaurus
- thematic eportfolios
- copyright management (creative commons)
- integrated dictionaries
- concept maps for graphical navigation.

Trials

Our initial trials were undertaken in three areas, and each had a different focus in terms of the issues matrix shown in Figure 1.

- Health – with the Pacific Open Learning Health Network (WHO) where we were interested in the capability of learners to support their own learning in remote communities.
- Education – with the Faculty of Economics and Business at The University of Sydney where we looked at the use of the technology and appropriateness of the information packaging with particular focus on copyright management to the desktop and navigation using tools like Compendium and CMaps.
- General – where we are taking ‘open content assets’ from different providers and reviewing the issues of integration with other assets, granularity, persistence and usefulness.

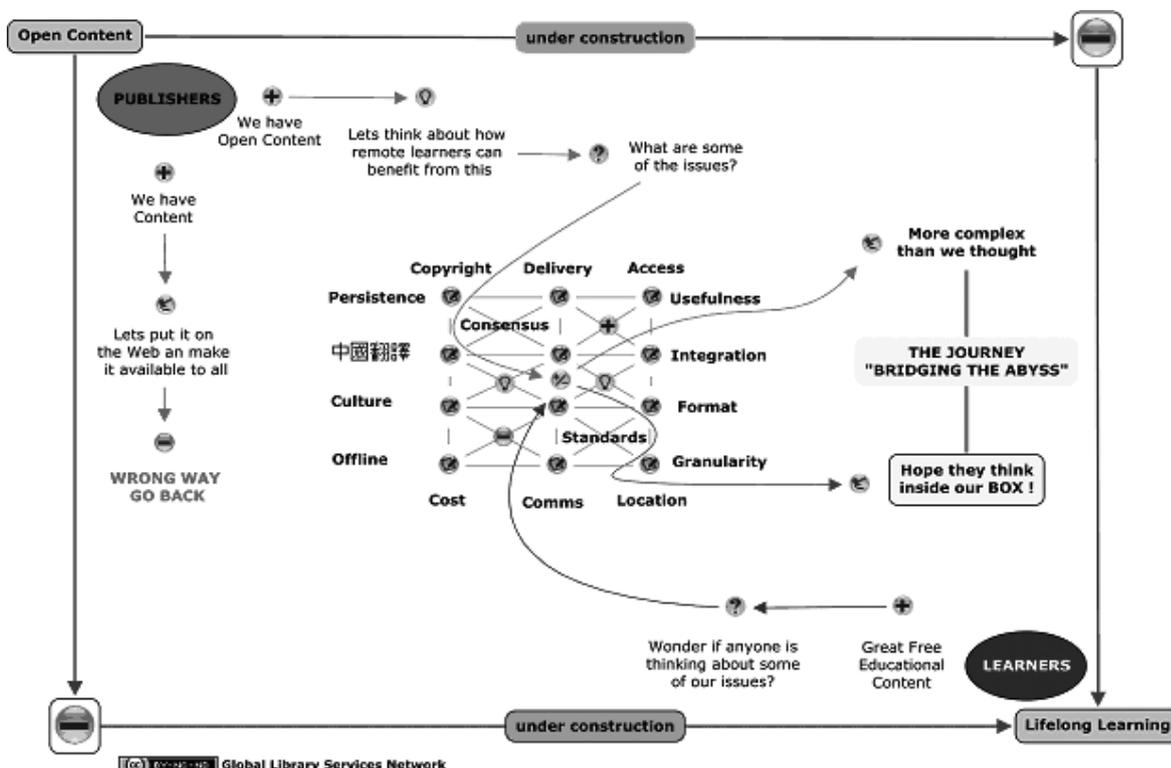


Figure 1. Bridging the abyss

Findings

There is no one fits all solution for the effective packaging and distribution of information to remote communities. A complex mix of issues related to content, connectivity, cost, culture, copyright etc. have to be considered, and the most appropriate option found for each community.

The paper will provide more in-depth information on the results of our trials with particular emphasis on the issue of integration of open content, navigation and usefulness within an individuals learning model.

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Note: We have only included conferences where we have progressively presented our findings.

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Is there such a thing as sustainable infodiversity?

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Abstract

Do we need a kind of sustainable infodiversity in our global knowledge store, equivalent to a sustainable biodiversity in our physical and ecological environment? In 2001, Edward O. Wilson proposed a five-point plan to counteract the collective ignorance that is contributing to the destruction of our environment:

- survey the world's biodiversity
- create biological wealth
- promote sustainable development
- save what remains
- restore the wild lands.

We could conceive of a parallel plan to foster a sustainable infodiversity in the context of our global store of information and knowledge.

The internet and its associated technologies are a complex information system with a complex set of ecologies analogous to the environment. Technical experts and ecologists understand, to some degree, the effect that changes to these systems will have. Most of the rest of us do not. That is not a criticism. It is impossible even for the experts to completely understand the knowledge society or the environment in their entirety.

Experts may have a deep understanding of parts of the system but they never know it all and the models they use are simplified representations of some aspect of reality. We do however need this deep understanding if we as a society are to make informed decisions about information systems, particularly those with wide-reaching effects.

In an information society access to, and control of, information is crucial. Who is to ensure that information technologies and the regulations governing them evolve in progressive or positive ways? What political philosophies will underpin this evolution? How, when, where and by whom will such decisions be made?

Sometimes these issues are left to groups of experts who draft legislation, on intellectual property for example, which potentially has a global effect. Yet intellectual property experts pursue lawsuits over silence and electronic buttons and it often takes the ordinary woman on the Clapham Omnibus to throw some common sense into the mix.

James Boyle suggests we need parallel programmes of activism and scholarship to protect the public domain, in the face of a kind of second enclosure movement – an enclosure of the 'commons of the mind' by private prospectors like the large entertainment, technology and pharmaceutical industries. Does this mean we need a

kind of sustainable infodiversity in our global knowledge store, equivalent to a sustainable biodiversity in our physical and ecological environment? In 2001 Edward O. Wilson wrote that more than 99% of the world's biodiversity was unknown and that we should rectify that state of affairs, since our ignorance was contributing to the destruction of the environment. He outlines a five point plan for doing this.

- Comprehensively survey the world's flora and fauna. This will need a large but finite team of professionals.
- Create biological wealth e.g. through pharmaceutical prospecting of indigenous plants. Assigning economic value to biodiversity (e.g. as a source of material wealth as food or medicines or leisure amenities) is a key way to encourage its preservation.
- Promote sustainable development i.e. 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'.
- Save what remains i.e. being realistic we are not going to halt environmental degradation overnight.
- Restore the wild lands e.g. through designating large areas of land as natural reserves like Costa Rica's 50,000-hectare Guanacaste National Park.

We could conceive of a parallel plan for that global information store, the infodiversity of which is potentially endangered by Boyle's postulated second enclosure movement.

Comprehensively survey the world's global knowledge store. We already have vast industries built on information wealth and intellectual property but we need to look at whether those industries are operating in a way which is in the best interests of a society requiring access to knowledge.

Promote sustainable information development – information production and exploitation which meets the needs of the present without compromising the ability of future generations to build on that knowledge store.

Save what remains e.g. seek to nullify developments in law or technology whose primary effect is the privatisation of knowledge and information in the public domain.

Restore the wild lands. Perhaps we need information reserves or wild lands, like networks of universities and other public institutions, where ideas can be allowed to roam in the wild and the people in these institutions can exchange ideas without the need to deal with proprietary intellectual property claims of the commercial world, at least within the confines of the reserves?

Scientific knowledge is currently at a stage of development whereby the popular belief that we can synthetically create biodiversity is a complete pipedream. Wilson suggested that the 'search for the safe rules of biotic synthesis is an enterprise of high intellectual daring'. Likewise the interaction of ideas, which creates the kind of infodiversity from which emerges other useful ideas, could be stifled by dividing up that public knowledge store amongst private owners. It would be like trying to recreate the biodiversity of the African continent in Dublin Zoo or someone's garden. Wilson is an advocate of using the law to protect biodiversity: 'The wise procedure is to use the law to delay, science to evaluate and familiarity to preserve. There is an implicit principle of human behaviour important to conservation: the better an ecosystem is known, the less likely it will be destroyed.' We could justifiably ask the question of whether intellectual property law, and indeed the whole portfolio of information and communications regulations, could play a similar role with our global information ecosystem.

Ultimately, the success or failure of what Boyle has called a second enclosure movement, rests on the evolutionary battle for dominance between two competing memes – the idea that knowledge should be shared and the idea that it should be controlled. They both have staying power.

When I first read James Boyle's and Larry Lessig's work it left me pretty gloomy about the future of the knowledge society, as a natural 'glass half empty' kind of guy. In spite of a number of the negative developments since then in the direction of Boyle's enclosure, though, I am now fairly optimistic about the power of the simple meme that sharing information is a good idea. The trick will be to continuously manage the balance between the competing (and simultaneously complementary) notions that:

- information should be shared
- information should be controlled – in the best interests of society as a whole.

Participatory design in open education: a workshop model for developing a pattern language

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Abstract

The production and use of open digital educational resources raises a variety of interrelated design challenges. We have argued (removed for review) that developing and using design patterns and pattern languages offers a framework for addressing such issues. However, sustainability can only be feasible if the *process* of developing design patterns can be scaffolded. To address this point we propose a workshop model and a set of supporting tools, iteratively developed and validated at four international conferences. This model brings together researchers, developers and practitioners in productive design-oriented discussions. We believe this model could be applied in a broad range of communities concerned with the development of open digital educational resources.

Introduction

The production and use of open digital educational resources raises a variety of interrelated design challenges. Two fundamental questions are of key concern: i) how can design knowledge be shared in an open way between participants; ii) how can design processes be scaffolded to support sustainable collaboration across communities. We have argued (removed for review) that the development and use of design patterns and pattern languages offer a framework for addressing such issues. However, sustainability can only be feasible if the process of developing design patterns can be scaffolded. To address this point we propose a workshop model, iteratively developed and validated at four international conferences.

Design patterns

We argue that design patterns hold a powerful promise for recording, calibrating and collaboratively refining expert knowledge. Patterns are flexible enough to address a very broad spectrum of practices, from in-depth technical development to deployment issues in classrooms. In addition, they are rigorous enough to oblige the pattern writer to focus on and concisely capture their own best practice. The design patterns approach (Alexander et al., 1977) was developed as a form of design language within architecture. This was done with the explicit aim of externalising knowledge to allow accumulation and generalisation of solutions and to allow all members of a community or design group to participate in discussion relating to the design. A design pattern ‘describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice’ (Alexander et al., 1977, p.x).

Eliciting patterns: a workshop model

The process of eliciting design knowledge from a community is far from trivial. Goodyear (2005) argues that the process of pattern elicitation must be inherently iterative. The language must be allowed to evolve as a cohesive ecology of ideas. Whenever a new pattern is introduced, it perturbs the structure of the language and modulates existing patterns. Our workshop model focuses on the creation of 'seed' patterns using multiple scaffolds: typologies, case studies and a bespoke set of online collaborative tools.

Typologies

Typologies provide a structured lexicon for classifying the critical aspects of design knowledge relevant to the community. In our project, we were concerned with mathematical games and so our typologies were: mathematical content, learning and instruction, educational context, games, interaction design and software design. We developed a typology tool which allows community members to browse, review and edit the various typologies. A typology is a complex monolith which captures the knowledge of a single specialist (or specialist group). Hence it is convenient to edit it off-line and upload versions as they mature. This is achieved by using a mind map editor (FreeMind). Once a typology is uploaded, it can be viewed either as a map image or as an html tree. The definitions of the terms are displayed alongside the tree view, and can be edited online. Each typology map is accompanied by a discussion forum, where other members of the community can comment, suggest changes or ask for clarifications. When a new version is uploaded, the previous versions are retained for reference. In order to facilitate cross-referencing between typologies as well as typology-driven context descriptions in the case studies and patterns, we provide a wiki-style method of linking to typology terms.

Case studies

Once the typologies were developed, we used them to help participants work with and through their case studies. The purpose of the case study development is multifold: i) to provide concrete examples of practice within disciplines; ii) to map practices and content detailed in the case study to the set typologies iii) for the team to identify linking points between disciplines and iv) to provide the starting point for pattern development.

Overall, we received 24 case studies. These can be broken down in two main categories: i) those that resulted from the insights gained from deploying technology enhanced learning tools in classrooms and ii) those that reflected the design practices evident in their development. Each case was relatively short and was designed to be presented to others (either project team member or to those who took part in our workshops) and to act as a starting point for discussion around design knowledge. Each case was broken down into:

- the context it describes
- the relationship to the typologies
- the aims of the particular case
- development/deployment details
- outcomes.

It was around these aspects of each case that we expected to find common starting points for the development of the initial set of 'seed' patterns.

The case study repository allowed case studies to be created, edited and indexed online using a simple template and a visual editor. Contributors created a new case study by providing a name and a short summary. They were then directed to an editable online document based on the case study template. This template prompted them to provide

the context, aims, details, outcomes and references. The details section was a free-form narrative which formed the main bulk of the case study. Contributors were encouraged to include graphical materials, such as screen shots and diagrams.

Using the model in practice

The workshop model was designed to engage a broad community in the collaborative development of seed design patterns. Participants were contacted prior to the workshop date, and encouraged to contribute case studies from their own experience. In summary, we began by walking participants through the process, presenting exemplar case studies from our own research and detailing how we mapped these to our typologies using our web tools. We then facilitated small group work on the same activity, motivating participants' discussion of their own practices, reflecting on the commonalities and differences of their contexts. Once this stage was completed, participants fed back to the whole group and the facilitators noted generalisable design decisions in collaborative discussion with the group. The participants were encouraged to critique and motivate why i) each design decision was chosen and ii) the process of how it could become a generalisable solution, resulting in a set of distilled seed patterns. Next, each group discussed the seed patterns, presenting how they might be used in their own contexts, referring, where appropriate, to the contributed case studies.

Conclusion

This paper extends the work presented in (removed for review) by proposing a model of participatory pattern elicitation workshops. This model, and a set of supporting tools, were developed iteratively through a series of workshops which brought together researchers, developers and practitioners in productive design-oriented discussions. While our workshops focused on the production and use of games for mathematical learning, we believe this model could be applied in a broad range of communities concerned with the development of open digital educational resources.

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(removed for blind review)

The TESSA OER experience: building sustainable models of production and user implementation

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Abstract

This paper analyses the origins, design strategy and implementation plans of the Teacher Education in Sub-Saharan Africa (TESSA) research and development programme. TESSA has its origins in the massive challenges involved in training the millions of teachers needed for universal primary education and expanding secondary school systems. Key contextual factors that have determined the TESSA approach are identified and aspects of the design structure are critically examined, together with different models of use by higher education institutions. We conclude by suggesting a pattern of resource making and design that could be adopted by other programmes serving parallel development needs.

The Teacher Education in Sub-Saharan Africa (TESSA) research and development programme (see www.tessaprogramme.org) has its origins in the massive challenges involved in supplying, retaining and training the millions of teachers needed for universal primary education and expanding secondary school systems across the region. These challenges include issues of teacher professionalism and quality, the low levels of qualifications of many teachers, the impact of HIV and teacher migration. In this context new modes of teacher education are essential to deliver the required expansion and development of the teaching force. The linking of inventive technological tools and capabilities to education models offers us potential opportunities to realise this training. The TESSA consortium (institutions in nine countries across Sub-Saharan Africa together with The Open University (UK), BBCWST and Commonwealth of Learning) is exploiting such innovative technology through creating open educational resources to support school based teacher development programmes.

The paper will identify key contextual factors that have determined the TESSA design strategy including the makeup of the programme consortium, the approach to originating and adapting OERs, the techniques used for authoring resources and the structure of the TESSA portal, will be critically examined.

The first phase of global OER activity has been primarily concerned with issues of technology and licensing as existing courses and materials have been transferred to an open platform. Such materials frequently represent the work of one or two educators. Building on such activity the TESSA OER project has two unique features: a focused purpose – supporting the improvement of classroom teaching in schools across Sub-Saharan Africa – and the generation of original OERs by educators (over 100 have been

involved to date) from institutions across the region. The primary audience is teacher educators in tertiary institutions and the effectiveness of the TESSA OERs depends on the engagement of these recipients and their level of skill and capacity. Colleagues across the partner institutions have not been seen as consumers of imported educational material but rather as collaborators in content production and distribution. Awareness of the current situation in these institutions together with likely short and medium term advances has been at the centre of TESSA OER development. Each stage has involved extensive consultation with potential user groups building on local knowledge, materials and approaches.

This activity has led us to identify a number of framing factors which we suggest are important descriptors of this type of OER project. These factors are not unique or exclusive to OER creation but are, we suggest, central to engaging and supporting users as they make these OERs fit for their own purpose, whilst retaining the integrity and benefits of the OERs, and contribute to global knowledge production.

- **Structure of the original OERs:** What is the most appropriate 'grain size' for materials which will enable maximal reuse of the material? How do we enable users to weave together a course narrative from the materials? and to develop their own original OERs?
- **Contextualisation of OERs:** There is a need to adapt or contextualise the learning materials for the different environments they are used in to offer genuine effective contexts for learning. How can this process be supported through the design of the internal structure of the materials?
- **Quality assurance:** The devising of flexible sustainable mechanisms for critical review of the materials.
- **Access:** Participating institutions need to be able to make the OERs accessible to their staff and learners, thus issues of technical capability at both institutional and individual level need to be considered. Such issues include connectivity, provision of effectively presented print materials and use of proprietary software.
- **Portal design and organisation:** A vibrant portal demands a balance between community collaboration, to generate value chains in the materials, with ease of location of materials (navigation) within the portal particularly for users with little familiarity with the web.

The rationale behind these issues and our first attempts to deal with them in the context of improving and enriching learning experiences for teachers will be discussed.

The TESSA programme is being adopted by a range of higher education institutions initially in nine African countries. Detailed plans developed to date include the use of TESSA OERs in sub- degree, B.Ed and CPD courses with substantial numbers of teachers during 2008: The Open University of the Sudan plans to integrate the materials into a B.Ed course for 67,000 students; The University of Cape Coast (Ghana) will be developing CPD courses for 27,000 teachers around the materials and Kyambogo University (Uganda) plans their use in a sub-degree course for 6,000 teachers. These different models of implementation (together with others from across the consortium) will be reviewed and the influence of these materials on course models and the design of learning experiences in partner institutions examined.

The paper will conclude by suggesting that TESSA is an example of a new generation, audience (teacher educators) specific OER initiative poised to take advantage of the revolutionary changes in communications technologies across Sub Saharan Africa. Drawing on a range of research activities carried out by the TESSA team we propose a pattern of resource making and design that could be adopted by other programmes serving parallel development needs.

Embedding open content in education: peoples-uni.org

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Abstract

The People's Open Access Education Initiative (peoples-uni.org) plans to provide credible, low-cost education context around open educational resources (OERs) for Public Health capacity building in developing countries. The education process is to:

- identify OERs to meet competences required to solve Public Health problems in developing countries
- facilitate online learning through volunteers in the 'north' and those working in universities in the 'south'
- accredit learned competencies.

Individuals and organisations are asked to undertake various distributed functions, mostly as volunteers but including commercial opportunities. We hope that this will provide sustainability both for the education process and for the OERs to be utilised.

Introduction

The People's Open Access Education Initiative (peoples-uni.org) has been created to provide credible, low cost education context around open educational resources (OERs). It aims to offer assistance with Public Health capacity building from the 'north' to the 'south' (developing countries) by going outside the traditional university setting. 'Northern' universities are constrained by the need to meet their own institutional requirements, such as student fees which are beyond the reach of most of the potential students, rather than the capacity building needs of those in the 'south'. Universities who create and offer OERs, do so from a sense of public good, but this does not extend to the provision of teaching or awards, which might undercut their business models. However, the sustainability of OERs depends on their being used in the context of an education process, and one for which academic credit can be gained to help with the career development of the students. We describe a model designed to offer credible and low cost capacity building in developing countries utilising OERs, which builds bridges across the digital and geographical divides and adds value to rather than competes with

universities in both 'south' and 'north'. Volunteerism is key to delivery, and we describe 'volunteersourcing' as our organisational model. We believe that this reflects current societal initiatives, such as those described as Web 2.0.

The educational model

We have previously described the background to the Peoples-uni.org (Heller et al, submitted for publication, and www.peoples-uni.org). We plan a three-stage process: identifying OERs to meet the competences required to solve Public Health problems in developing countries; online facilitation of learning by volunteers in the 'north' and those working in universities in the 'south'; and accreditation of learned competencies. Early experience suggests that a wealth of material of relevance to Public Health is readily available on the internet, provided mainly by universities and Public Health organisations in the 'north', and much of it has already been assessed for quality. Due to the large amount of available material, help is required for the potential student to navigate to material to develop appropriate competences. The model of discussion boards around focused questions posed by a tutor/facilitator, such as that used in other online learning (for example www.manchester.ac.uk/mph), is one which we plan to use here. Because much has been produced for an audience in the 'north', interpretation and/or adaptation will be required to ensure relevance to Public Health problems in the 'south'. We envisage that this will occur through the tutor/facilitators and the students making suggested changes leading to revision and reposting of materials – consistent with the philosophy of both Web 2.0 and Education 3.0 (http://www.firstmonday.org/issues/issue12_3/keats/index.html). By starting with the 'problem', such as maternal mortality, we have found that published lists of Public Health competencies may need to be adapted to identify competences that are appropriate for the setting and problem to be solved (Heller, submitted for publication). Since it is universities who in general provide the accreditation of learned competencies through degrees, diplomas and certificates, if we go beyond the traditional university model, we will have to identify alternative methods for this accreditation.

The organisational model for sustainability

Rather than create a structure which will require major funding, hence threatening sustainability, we are calling for individuals and organisations to undertake various distributed functions, mostly as volunteers but including commercial opportunities. We have called this 'volunteersourcing' as a variant of 'crowdsourcing'. There is a highly successful organisation called the Cochrane Collaboration, which provides systematic reviews of medical interventions to assist with the practice of Evidence Based Medicine (<http://www.cochrane.org/docs/descrip.htm>). The organisational structure involves a small central coordinating group (funded through the fees to access the library of systematic reviews), and a number of groups performing the review functions on the basis of volunteers who are able to obtain academic credit for their work (and who may seek funding for their infrastructure support). We believe that universities in the 'south' will find collaboration in the Peoples-uni attractive, through access to new materials and students, as well as contact with various Public Health academics and practitioners in the 'north'. We hope that various individuals and organisation in the 'north' will find volunteerism attractive – for example members of the Diaspora of various countries who want to give something back to their country of origin and retired academics and practitioners who still have something to contribute. For those who still require recognition of their activities for professional credit, the system of recording of educational input will be required (and is feasible through the WikiEducator system for example).

Sustainability of the Peoples-uni will depend on the ideals of the concept and the success of the processes put in place. The sustainability of the OERs to be utilised is critical to the success of the Peoples-uni – if the OERs dry up, so will the Peoples-uni. We believe

that there is interdependence, OERs will be better used if in the context of an educational programme, and hence sustainable themselves. Our model is consistent with what Downes has previously stated in his essay on sustainability (<http://www.downes.ca/cgi-bin/page.cgi?post=33401>): ‘Though there is great temptation to depict the sustainability of OERs in terms of funding models, technical models or even content models it seems evident that any number of such models can be successful. But at the same time, it also seems clear that the sustainability of OERs – in a fashion that renders them at once both affordable and usable – requires that we think of OERs as only part of a larger picture, one that includes volunteers and incentives, community and partnerships, co-production and sharing, distributed management and control.’

Repurposing for an open education repository: quantity, quality and processes

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Abstract

The source materials being repurposed by OpenLearn are widely recognised for their high quality. They have, however, been predominantly developed using printed text as their core medium or 'spine' supporting different combinations of elements of other media. Repurposing such materials to create online resources is, therefore, not a trivial matter, particularly when the project must deliver targets that include several thousand hours of materials. This paper explores the production processes supporting OpenLearn's repurposing work. Using a flowchart that tentatively represents these processes, the paper discusses roles, responsibilities and the challenging negotiations required to balance conflicting requirements.

As part of its ambitious goals, OpenLearn has created and is further developing an online repository of learning resources created from extracts of existing UK Open University (UKOU) courses. UKOU course materials are widely recognised for their high quality, imaginative use of media and innovative pedagogical approaches. These courses, however, have been predominantly developed using printed text as their core medium, with the 'spine' supporting elements presented in a variety of media. Despite the already considerable experience of the Institution in supporting its students using computer-mediated communication, online presentation of core course content is, in itself, a relatively recent move. Current OpenLearn source materials also often include third-party elements and, in some cases, software components that may not be readily transferable to the online environment due to clearance costs or technical constraints. Repurposing UKOU materials with a view to creating online resources is, therefore, not a trivial matter.

A major challenge for OpenLearn, thus far, has been to create an appropriate context to support the repurposing process in imaginative yet realistic ways, vis-à-vis internally- and externally-imposed constraints. To meet this challenge, a multi-disciplinary team has been assembled that includes academic, media and support staff. Crucially, a core, streamlined production process has been established to deal with the bulk of the work. Whilst this offers a relatively stable production process, it may not always offer the flexibility required for more creative, experimental repurposing to be carried out and, in this respect, a these type of units require 'special' treatment that may, or may not, fit the current production process.

This paper explores the main production processes supporting the majority of the repurposing work carried out in the OpenLearn project, with a particular focus on issues related to pedagogy. It also describes the necessary administrative procedures required to support the production process. Using a detailed flowchart that represents all production processes, the paper examines roles, responsibilities and the challenging negotiations

required to balance often conflicting quality- and quantity-related requirements. The flowchart described in this paper was developed over a number of months and its creation was based upon a variety of discussions and interviews with a significant sample of OpenLearn team members representing all professional areas of the project. It was a collaborative piece of work. The creation of this visual representation of the production process was an iterative development and this paper describes the flowchart created in January 2007.

A case study framework for open content projects: Free High School Science Texts and the case for continuous learning

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Abstract

This paper presents a case study framework that has been developed for the purpose of providing an innovative template for knowledge sharing about open education projects. We will discuss the findings of the first pilot of the case study project, Free High School Science Text (FHSST), a South African-based open content initiative that facilitates the collaborative creation of science, mathematics and computer science high-school level textbooks online. The paper will also discuss the participatory case study framework as a means to encourage others to assess, improve and create a knowledge base among open content projects, and improve the sustainability of the open educational content movement.

Introduction

A wide range of organisations and individuals are actively involved in the development of open educational resources (OER). Partly because the field is so new, there have been few opportunities to share learnings and advances within and across projects and boundaries. Little is known, for example, about how projects are facilitating the localisation of OER among diverse users, what structures they are instilling to support peer production, and how they are attempting to inspire community and volunteer engagement. Therefore, there is great potential for knowledge sharing that can advance and improve the development, use, and reuse of OER.

This paper presents the findings from an open content case study, which was initiated to explore ways in which OER projects can internally assess their practices and share what they have learned within and across project boundaries. Specifically, the paper offers the findings of the first pilot of the case study, Free High School Science Text (FHSST), a South African-based open content initiative that facilitates the collaborative creation of high-school level textbooks. It also offers a case study framework through which projects can understand and assess their activities, and illustrates how the framework emerged through research and collaboration with FHSST and from the open content community globally. In doing so, the paper serves as an important step toward the creation of a relevant, adaptable participatory evaluative process that enables those in the educational open content space to learn from each other, to share with the larger open community, and to be accountable to those who support them.

FHSST case study

FHSST is a South African based open content initiative, founded by graduate students seeking to address their country's dearth in science and math textbooks for high school students. The initiative draws on volunteers and an online collaborative authoring platform that supports the creation of textbooks that are relevant, useful and adaptable to local teaching and learning situations, both in South Africa and elsewhere.

Through interviews with FHSST project leaders, a web-based survey and phone interviews with FHSST volunteers, observations of activities on the FHSST discussion forums and authoring platform, as well as analysis of internal FHSST documents and organisational content, the case study sought to understand the practices and challenges involved in building and engaging a wide range of diverse communities in the collaborative creation of open educational content.

The case study revealed that for FHSST, the ability to facilitate a community of volunteers who continuously contribute high quality content necessitated ongoing technology, content and process improvements—all toward the aim of making the content creation process as volunteer-centric as possible. Examples include breaking the content assignments into smaller chunks that are more manageable for volunteers than entire textbook chapters; facilitating local face-to-face content 'hackathons' for groups of volunteers living in the same location; providing social networking tools through which volunteers can communicate and offer feedback on the content creation process; and supporting a division of labor structure by assigning various task roles, including content evaluator, mediator and coordinator.

Other practices to address the challenge of inspiring community engagement included making internal information and communications transparent and open so that dialogue is inspired within the FHSST community, and leveraging external content providers (teachers and paid contractors) alongside the core volunteers' work so that new content is continuously filtered in.

The case study further revealed the importance of developing ways to ensure that finished textbooks would be relevant, useful and adaptable to local teaching and learning needs and to South Africa's curriculum standards. Alongside attracting interest from South Africa's Ministry of Education (MOE) and working directly with the author of the MOE's curriculum standards, FHSST conducted teacher and learner trials and workshops in eight pilot schools. Feedback from these trials has been incorporated into the textbooks and also filtered back into the ongoing process improvements. For example, the trials revealed a need for more science lab activities within the texts, especially those that paid heed to the lack of lab equipment and tools and the homemade materials that served in their place. In an effort to address this need, FHSST added an activity creation component to its authoring platform, so that volunteers could more easily submit new activities.

Challenges that remain for FHSST include finding ways to facilitate ongoing, steady contributions from volunteers, many of which who leave after submitting content in their expert area, getting the textbooks into classrooms and understanding their impact, and establishing processes that allow for the continuous filtering of teacher and learner use experiences back into the textbooks.

Toward a continuous learning framework

An important by-product of the FHSST case study has been the creation of an initial framework to potentially guide other OER projects through their role as active participants in the development of mechanisms to begin their own, ongoing collection of internal information about their activities, challenges, successes and lessons learned. The following framework has been developed through dialogue between FHSST and ISKME:

- **Determine expectations and readiness** for assessment and research into project learnings, which includes setting and understanding the goals of the work as well as the identification of project stakeholders who will participate.
- **Develop mechanisms for research and assessment** that build on embedded processes for measurement, assessment, and continuous learning that incorporate input from multiple project stakeholders. This includes identification of existing communication and information processes used within the organisation, and the collaborative creation of an ongoing project assessment plan.
- **Collect, analyse, report, and reflect** upon data about internal practices and how they are aligned to project goals through collaboratively developed assessment mechanisms.
- **Facilitate a culture of learning** through ongoing project assessment, which allows for the continuous alignment of theory in action (expectations, or what the project thinks it should be doing) with theory in use (actual practices).

The process of developing the framework and engaging FHSST's leadership team as researchers of their own practices has culminated in concrete mechanisms that other OER projects can draw upon. For example, the collaborative work (between case study researchers and the FHSST leadership team) of surveying FHSST volunteers led to the development of a survey protocol, as well as documentation around how it was distributed, collected and analysed by FHSST leadership. These mechanisms are all tools and insights that other relevant OER projects can potentially use in the analysis of their own practices—specifically around how volunteer recruitment processes, the content authoring processes, and the communication channels within them support and facilitate collaborative content creation.

Conclusions

The case of FHSST has revealed that the OER movement is witness to innovations around the creation of open content and its use and reuse. The case has also revealed how through internal evaluation, research and assessment, projects can begin to create a culture of learning, wherein continuous and iterative exploration is used to reinforce, test, and modify internal community knowledge. A central component of the continuous learning framework is the recognition of the importance of developing mechanisms that build on existing communication processes as well as the project's natural ways of working so as to facilitate the engagement needed for ongoing, continuous internal project assessment in the absence of external researchers. Next steps are to begin to flesh out the framework through further engagement with the OER community and additional OER projects so that it might be applicable and usable across multiple OER initiatives.

Sharing elearning content: what are the main challenges?

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Abstract

This paper will review the output of a wide range of JISC projects in the content area and summarise the findings of these projects to provide guidance regarding the barriers to sharing and reuse of learning content. It will do so in the context of the growth of user-generated content (web 2.0 resources), alternative forms of licensing such as the creative commons and institutional content sharing initiatives such as The Open University's OpenLearn and MIT's OpenCourseWare. It will draw upon a wide range of projects, programmes and studies dealing with many types of content and several use cases.

It is a holy grail of eLearning that content, be it raw media assets, information, learning objects, learning activities, or learning designs, should be made once and used in learning many times, either unchanged or modified. Behind this simple aspiration lies a complex web of interdependent issues; organisational, cultural, technical, legal and pedagogical. But which of the issues matter most, for whom, and in what circumstances? How do the brave principles of sharing and re-use square with the practical reality of organising learning? And how should future development work by the JISC and others be shaped so that the barriers to sharing and re-use are minimised or avoided, and so that sharing and re-use is actively encouraged and enabled? Taking account of research such as Becta's 2006 e-Strategy Implementation Review and JISC's own LEX studies, this paper will review the outputs of a wide range of JISC-funded/managed projects, summarising findings, drawing out lessons and assessing their significance, and suggest priorities for the future. It will take as a backdrop the fundamental changes that are taking place in the wider information environment, in particular the development of mass participation in quality content creation, as represented by web 2.0 user-generated resources, Creative Commons, and in education by initiatives like MIT's OpenCourseWare and The Open University's OpenLearn.

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JISC has invested in a number of development programmes and projects concerned with sharing eLearning content. Such content includes learning objects, learning designs, simple slides or images, assessment items, course notes, and students' material – these include but are not limited to:

- digital assets – normally a single file (e.g. an image, video or audio clip), sometimes called a 'raw media asset'
- information objects – a structured aggregation of digital assets, designed purely to present information
- learning objects – an aggregation of one or more digital assets which represents an educationally meaningful stand alone unit
- learning activities – tasks involving interactions with information to attain a specific learning outcome
- learning design – structured sequences of information and activities to promote learning.¹

The paper will describe the results of a study whose aims are to summarise and synthesise the findings from a wide range of relevant JISC-funded/managed projects, and to provide a short, justified assessment of where the key challenges are, especially where issues are complex and cross-cutting. The following types of issue were anticipated to be relevant to the development, use and sharing of eLearning content, and were flagged at the start of the study:

1. Organisational, including staff development and training, the evolution of institutional and other policies, and organisational practice such as the use of multi-disciplinary teaching teams, institutional and other repositories, and the role of the learning technologist.
2. Cultural, including academic culture and practice within and between disciplines, student culture and practice, the cultures of support services, and those of particular sectors and sub-sectors such as further education colleges, 'old' universities, 'new' universities, 'research-led' universities
3. Legal, including both actual and perceived concerns relating to intellectual property rights, licensing, practices and policies related to attribution, and the management of legal risk within institutions
4. Pedagogic, including instructional approaches used, and the ways in which the development, use and sharing of eLearning content fits with these, or does not.

¹ Adapted from Littlejohn, Falconer, and McGill, 'Characterising effective eLearning resources', *Computers & Education*, in press

5. Technical, including metadata and interoperability, any move toward more service-oriented approaches, embedding systems within the institutional and inter-institutional contexts.

The work will focus on JISC-funded/managed activities within the following development programmes.

Digital Libraries in the Classroom² – projects included:

- DIDET, which took forward the development, implementation and use of a testbed to improve the teaching and learning of students partaking in global team-based design projects. The project combined the use of digital libraries with virtual design studios.
- The Spoken Word, which, using existing digital audio from rich and authoritative sources (particularly, but not exclusively, the BBC, NARA, MSU and NWU), created an integrated C & IT learning environment in which staff and students can ‘write on and for’ the internet.

Focus on Access to Institutional Resources (FAIR)³ – projects included:

- PORTAL, which explored a wide range of issues relating to institutional portals, and the integration of national resources with institutional information and services.
- Fair Enough, which examined the needs of FE for access to JISC collections and services within a virtual learning environment, and how these are disclosed and accessed alongside local resources.

Distributed eLearning Programme⁴ – projects included:

- HE Academy/Cultural issues projects based within HE Academy subject centres to address particular subject area cultural issues.
- A Regional Distributed eLearning Baseline Study – to assess the cultural and legal issues that might inhibit successful use of elearning systems and produce guidance for the educational community.
- Personal Learning Portal Pilot – a pilot version of a personal learning portal that can be used to access range of services (including induction, support services, personal development planning and eportfolios) from multiple institutions.
- Rehash – to repurpose existing collections of contextual RLOs to provide teachers and students with attractive learning materials to support courses which widen access to medicine.
- L2O – to pilot a model of regional collaborative partnerships sharing and re-using electronic learning resources across institutions and across sectors.
- G4L – to explore the delivery of elearning courses to SMEs, which utilise learning resources and administration that is distributed among a consortium of universities and colleges.
- EERN – to pilot an enhanced version of DELTA (a JISC funded system that utilises the power of the semantic web to find materials in institutional repositories).
- WM-Share - to produce a framework for promoting the use of shared digital resources in regional FE and HE institutions by making them available online using repository software. The project also conducted pilot studies of Shibboleth.

² Digital Libraries in the Classroom: http://www.jisc.ac.uk/whatwedo/programmes/programme_dlitc.aspx

³ Focus on Access to Institutional Resources: http://www.jisc.ac.uk/whatwedo/programmes/programme_fair.aspx

⁴ Distributed eLearning Programme: http://www.jisc.ac.uk/whatwedo/programmes/programme_edistributed.aspx

Digital Repositories Programme⁵ – projects included:

- Community Dimensions of Learning Object Repositories, which identified and analysed the factors that influence practical uptake and implementation of learning object repositories, with a focus on social and cultural issues.
- Rights and Rewards, which focused on the support issues, rights protection and rewards necessary to motivate teaching academics to use repositories and blended the results with those required by research academics.
- SPIRE, which focused on the setup and working through of the feasibility of peer-to-peer technologies to aid the design of learning in the UK, and reviewed the educational use of Web2.0 tools more generally.

SFC eLearning transformational projects⁶, including:

- BlendEd – to adopt a holistic approach to the introduction of blended delivery in specific curricular areas and in so doing explore the associated issues challenges and benefits
- CELLS – to design and develop a set of coherent and rational curricula for degree and Higher National programmes in Life Sciences and develop interactive elearning materials for the core part of the curricula.

In addition, the study is expected to draw from the experiences of the Jorum⁷ and from the X4L Staff Development Resources,⁸ which synthesised findings from the X4L programme. Other JISC work will also fall within the scope of this research, and the process of identifying resources and areas for synthesis is ongoing.

The output from the study, which will be reported at the OpenLearn 2007 conference, will be a concise summary of the published findings from this wealth of development activity from recent years, and a definitive statement of the challenges ahead in achieving the goal of sharing and re-using learning materials.

⁵ Digital Repositories Programme: http://www.jisc.ac.uk/whatwedo/programmes/programme_digital_repositories.aspx

⁶ SFC eLearning transformational projects: http://www.jisc.ac.uk/whatwedo/programmes/elearning_sfc.aspx

⁷ Jorum: http://www.jisc.ac.uk/whatwedo/services/services_jorum.aspx

⁸ X4L Staff Development Resources: http://www.jisc.ac.uk/whatwedo/programmes/programme_x4l.aspx

From Africa through Germany to the UK and back again: the potential of Open Educational resources

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Abstract

Open Educational Resources (OERs) are freely available worldwide. Though sustainability (Downes, 2006) and production issues (Ferreira and Heap, 2006) have been discussed, more research is needed into how adopting OERs impacts on organisations. This paper will first report on how academics and teachers in ten institutions/organisations based nationally and internationally plan to use OERs with learners. Indeed, academics, teachers and facilitators are being encouraged to provide a wide variety of learning situations and experiences for the changing student population. The later discussion focuses on issues and possible changes required to internal procedures within organisations when OERs are adopted.

Introduction

This paper explores two strands of research. The first reports on how ten institutions/organisations plan to adopt Open Educational Resources (OERs). The second part of the paper discusses issues related to possible changes needed to institutional procedures in the ten institutions/organisations. OERs could play a vital role and potentially increase learning opportunities for those from non-traditional educational backgrounds. OERs add to the mix, in a climate where educational institutions and organisations of all descriptions are adopting online learning environments to enhance their teaching and learning processes. They are moving towards elearning approaches for course delivery. An integral part of this elearning agenda is the inclusion of a Virtual Learning Environment (VLE) such as WebCT, BlackBoard, or Moodle. These VLEs host course materials and communication facilities though often access is password protected. This suggests that many institutions or organisations develop and present their teaching materials in a closed environment. Indeed 'not all academics believe that all potentially eligible scholarly content should be open' (Smith and Casserly, 2006, p2). This is in contrast with Open Educational Resources (OERs) movement, which provides free access to educational materials. This paper will discuss how ten institutions/organisations worldwide (closed environments) propose to use and adapt OERs provided by The Open University in the United Kingdom (UK).

The Open University in the UK (a distance learning University) has been developing supported open learning multiple media materials for almost 40 years. A proportion of these high quality materials are being made available and accessible worldwide through the Open Content Initiative (OpenLearn). The William and Flora Hewlett Foundation fund the OpenLearn project.

The online environment

OpenLearn is an environment based on the Moodle course management system. It hosts twin Websites; a LearningSpace aimed mainly at learners and a LabSpace aimed mainly at educators. Units of material available on OpenLearn are taken from the original Supported Open Learning version of a course (which includes tutorial support and assessment). In the OpenLearn context the materials called 'units' are standalone without organised tutorials and formal assessment. OpenLearn provides similar facilities to a VLE but in an open and accessible environment.

The environment was launched on 25 October 2006 and worldwide access continues to increase. OpenLearn provides an observatory, which affords the exploration of the range of activities taking place. The OpenLearn website was visited by 649,424 unique visitors between 25 October 2006 and 25 June 2007.

Units of material in OpenLearn vary in length between four and twenty hours of study time. The learner can interact on an individual basis with the material in the eleven different topic areas or work in groups with other learners. A learner is considered to be anyone and everyone. Amongst these users, some 23,224 have also registered (by the end of July 2007) to use the additional facilities, which include forums, online journals and other resources. Forums are online conferences where learners can engage in asynchronous communication. Online journals allow learners to record their learning experience. The majority of visitors are from the UK and US with 90% being new visitors (not Open University staff or students). So how are these OERs being used?

The approach

This paper focuses on the educator and their perspective of how they would use OERs with their learners. As a first step to understand how OERs could be used by learners under the guidance of academics or teachers the following questions are being addressed:

- How do educators plan to make use of OERs with their learners?
- Do they use the content as presented or do they want to change it?
- How are the OERs integrated with other educational resources in the types of closed environment mentioned above?
- What are the implications in terms of policies and procedures when using OER's for accreditation?

Aim and research methods

The aim of the research is to investigate how educators can use OERs with their learners and to ascertain what impact this will have on established policies and procedures. Changes may be required to internal procedures within organisations to enable them to adopt standalone OERs as part of their curriculum and assessment strategy. This sees a model where content in itself, however well constructed, is only part of the education model – a survey of OU students carried out before OpenLearn started showed a desire for tutorials (64%), assessment (90%) and qualifications (89%). In practice there will be many informal learners attracted to free content without these aims, however it raises important issues for whether separated content gives organisations a chance to review their own approaches and to offer ways to bring open content into their curriculum. An initial survey aimed to establish across a small sample of organisations whether there was a recognition of these opportunities, what options might be considered and what ideas might emerge.

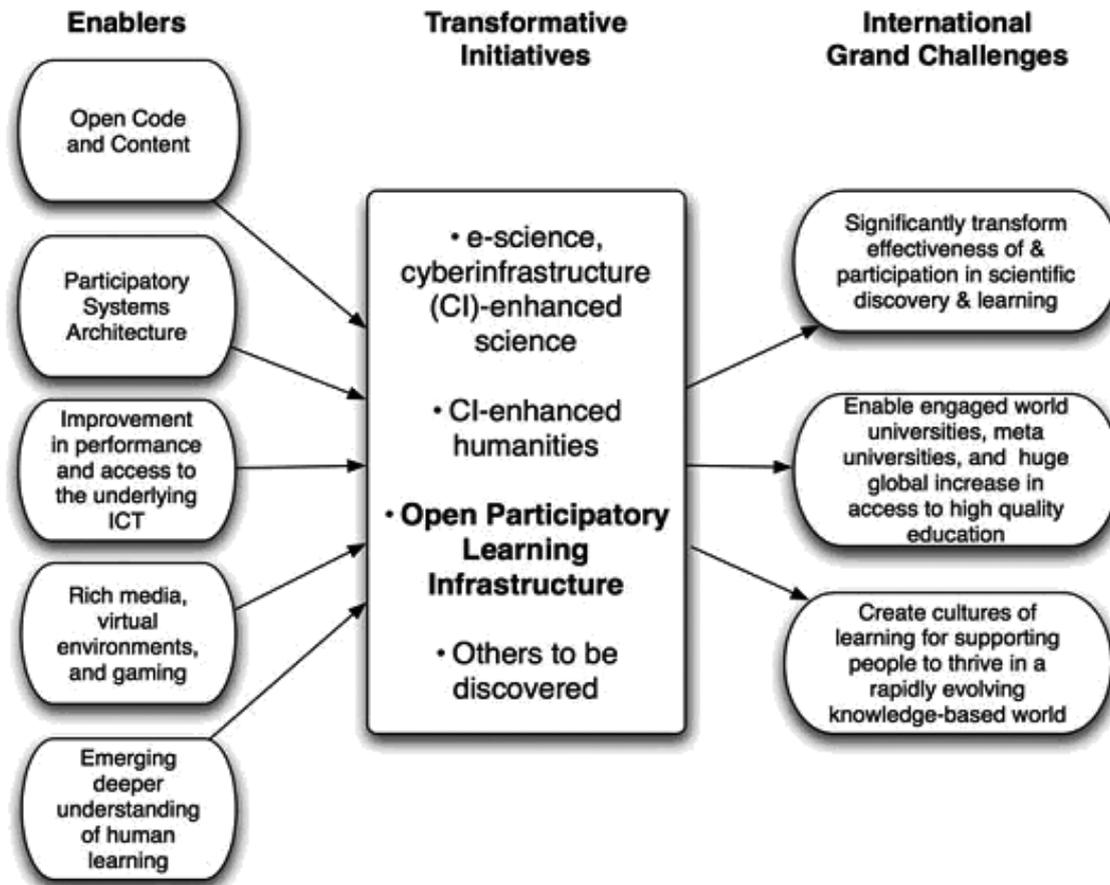


Figure 1. Enablers and collateral initiative context for the OPLI Initiative (from Atkins, Seely Brown, and Hammond, 2007)

The OPLI model considers that open content (including open code) needs to work through an overall infrastructure to then provide services to the communities. The three areas considered by Seely Brown et al. are:

1. Transformation of scientific discovery.
2. Engagement of universities to increase access to education.
3. New cultures for learning.

Of these the second aspect is the most incremental on current approaches and is in part dependent on the attitudes of existing providers. The more radical changes proposed in the paper are not dismissed but are not explored further here.

The study involves twelve representatives from ten organisations' (a school, colleges and universities) based nationally and internationally:

- five semi-structured interviews (Preece et al., 1994; Zand, 1994; Fowler, 1993) were conducted face to face when distance was not an issue
- seven personal online semi-structured interviews were conducted when the interviewer and interviewee were long distances apart. Debenham (2001) termed this technique the epistolary interview.

This research provides useful and important baseline guidance for future research into the many possibilities of how formal tutorial support and accreditation could be achieved with OERs.

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From boot camp to holiday camp? Some issues around openness, Web 2.0 and learning

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Abstract

Open Educational Resources were initially seen as a way to exchange and exploit content. For example, the MIT OCW material can be adapted as a curriculum plan and set of resources for use in another institution. What has also emerged is that there is also direct use of the material by learners. OpenLearn has a configuration that more clearly reflects this by offering a 'LearningSpace' designed to allow users to pick units to work with and use them within their personalised learning environments and alongside other learners. However, these learners will not be part of any registered course, won't be focused on compulsory assignments and will not get a qualification at the end of their work. The 'Boot Camp' elements of education, where learners are organised and coerced into performing necessary learning practices, has therefore disappeared. So a question is whether these elements should be replaced with features that are more in line with a 'Holiday Camp', where learning is loosely structured and 'fun', but is still relevant and valuable. This talk will explore these metaphors as lenses that can help us to design for learning practices that share their landscape with huge-scale media-rich interaction and radical publishing in the context of open technologies and Web 2.0.

Motivation for learning has complexities that the education system tends to simplify by providing drivers such as the 'carrot' of qualifications, the 'stick' of assignment deadlines and examinations together with support from people, resources and the environment. This model can be loosely related to education as a 'Boot Camp' with the learner in the role of the new recruit who must go through all the stages demanded of them. Open educational resources can of course apply into this formal structure but they also seem to offer a view of a different world where everything is open: when, what, where and how can all fall under the control of the learner. In such circumstances it can become a lot less clear where the drivers for learning practices can come from. There appear to be two possible

answers. First that the same motivations will fall into place. The learner will be looking towards some qualification or recognition for their work, will want to test their knowledge, and impose their own deadlines and perhaps increase the pressure by seeking to work as a group or get external checks on progress. The second possibility is that the motivation comes from interest-driven practices where learning is more enjoyable and 'fun'. Learning can offer its own reward and in itself helps give meaning to life. In this alternative view learning can be considered as a 'Holiday Camp' of choices, where the learner can play, meet other like-minded people and have time out from other cares. The result may be that the learner will be able to switch attention, looking for quick hooks to hold their interest and skip over anything that will take too long. Equally such a learner can be dedicated beyond any restrictions designed into the content and prepared to be involved beyond any apparent reward.

There is some evidence for both views of these sorts of behaviour from informal learners, who can have blends of the two sorts of motivations. In the first case we can see contributions to forums motivated by the materials in the units. For example the OpenLearn unit on studying the Arts and Humanities includes posts on the final exercise, a reflection on deciding to study the arts, and responses from other learners. On the other hand we can also see users who dip in to the resources in OpenLearn and spend much shorter times engaging with them. We need to consider how we can design for each ends of this spectrum of use and whether our expectations of what users visit the site will shape what we offer. One way to accommodate different and initially unknown types of users is to anticipate different profiles that are articulated in terms of the practices that the students are likely to want to follow. These practices, in turn, will vary along certain dimensions such as the provisionality of content, what counts as 'closure' of an activity and the fluidity of publishing roles. These dimensions and the differing ways they can be articulated will be outlined the talk.

One way of designing for the Boot Camp is to create digital analogues of conventional organisational structures and processes. In certain ways, this approach is similar to prevalent initiatives in Learning Design (e.g. Britain, 2005), where learning activities are scheduled and coordinated using digital tools in line with relatively conventional and established learning procedures.

Through designing for the Holiday Camp, we are accommodating a different type of learning and meaning making, that is driven more by the activity itself than by externally imposed goals or procedures. Indeed, this type of learning may not be driven by any extrinsic goals at all, or goals and motivations may arise serendipitously from the activity that is being performed and the interest or curiosity that is generated. This approach has more in common with some recent and arguably more radical approaches to learning design for the technology enabled learner (e.g. Ravenscroft and Cook, 2007). However, the holiday camp is not devoid of structure, as this is provided by configurations of learning opportunities, or ambient learning designs, that catalyse learning activities in certain directions. Ongoing work into digital dialogue games (see www.interloc.org and Ravenscroft, 2007) is operationalising this concept of ambient pedagogy, or ambient learning design, through designing an attractive and engaging experience where the rules of interaction are 'behind the scenes'. This work complements recent re-theorising of learning interaction in the context of the widespread evolution of relatively new multimodal literacies (Ravenscroft, Wegerif & Hartley, 2007) that are particularly prevalent within Web 2.0 practices.

What is important about both of these approaches however, is the need to have some sort of structure, or catalysts, for learning. The boot camp designates clear, explicit and distinguishable pedagogy that should be followed to foster useful learning practices and the development of academic skills. The holiday camp incorporates a less formal and more implicit, or ambient, learning design, that stimulates activities and practices along favoured lines. In some senses, these approaches can be considered as 'hard scaffolding'

and 'soft scaffolding' respectively, and can be considered as complimentary dimensions rather than opposing stances.

The choice of labels in the paper may seem to suggest that we are against the 'Boot Camp', but this is not the case and indeed much of what is happening at the moment is about opening up the opportunities for those who cannot access the formal education system. Rather we are keen to include the 'Holiday Camp' and its ambient pedagogy in how people plan and design for open education. This is a way to look towards the future for learning and to extend the concept of open, by being open to a range of motivations from our users. In brief, initiatives in 'open learning' need to accept that in some situations students will be interest-driven and self-motivated whereas in others they may benefit from being managed and directed, and supporting both styles of practice should not be seen as problematic.

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Open Learning Initiative: measuring the effectiveness of OLI statistics course in accelerating learning

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Abstract

A primary goal of the Open Learning Initiative (OLI) at Carnegie Mellon is to provide free access to high quality post-secondary courses (i.e., similar to those taught at Carnegie Mellon). Previous evaluations of the effectiveness of OLI courses have shown that our online courses teach students as effectively as existing instructor-led courses. Two such studies have found this result for the OLI-Statistics course. This report describes our current study of OLI-Statistics in which we are evaluating the accelerated learning hypothesis – that learners can learn a semester’s material in half the time, while still achieving the same or better learning outcomes.

The Open Learning Initiative (OLI) is an open educational resources project that began in 2002 with a grant from The William and Flora Hewlett Foundation. Like many open educational resources projects, ours makes its courses openly and freely available. Our goal has been to create complete online courses that enact instruction: they offer information, activities, practice and feedback — all arranged so that students can learn even if they do not have the benefit of an instructor or classmates. Each of our courses is developed by a team composed of learning scientists, faculty content experts, human-computer interaction experts and software engineers in order to make best use of multidisciplinary knowledge for designing effective instruction. Moreover, as students work through the OLI courses, we collect real-time interaction level data of student use and learning and we use this data to inform further course revisions and improvements.

While our courses are designed so that students can learn effectively without any instructor, they are often used by instructors to support and complement face-to-face classroom instruction. Thus, our evaluation efforts have investigated OLI courses’ effectiveness under both of these conditions, stand-alone and blended-mode instruction. The OLI-Statistics course is one such example and is the focus of this report.

Earlier studies conducted in Fall 2005 and Spring 2006 of the OLI-Statistics course investigated its instructional effectiveness as a stand-alone course. Specifically, we tested the hypothesis that the OLI-Statistics course was at least as effective as an instructor-led course, in this case, introductory Statistics taught at Carnegie Mellon University. The instructor-led course included three lectures and one lab per week. Students using

the OLI-Statistics course did not attend any of these sessions; they did, however, have access to a statistics instructor once a week. This instructor did not prepare or deliver any additional instruction during these meetings but would answer questions and take note of students' feedback on the course. For both studies, in-class exam scores showed no significant difference between students who used the stand-alone OLI-statistics course and students who attended the traditional instructor-led course.

In the Spring 2006 study, we also administered an externally developed test of statistical reasoning, the Comprehensive Assessment of Outcomes in a first Statistics course (CAOS; DelMas et al., 2006) as a pre- and posttest. These data revealed significant learning gains (posttest minus pretest CAOS score) for students in OLI-statistics course. Additionally, we examined outcomes (as defined in DelMas et al. AERA, 2006) of items on which less than 50% of students in the national sample were correct on posttest. Students taking the OLI course did significantly better than the national group on those particularly challenging items. For more details on the Fall 2005 and Spring 2006 studies, see Meyer & Thille ICTOS7, 2006 and Meyer CAUSE, 2007.

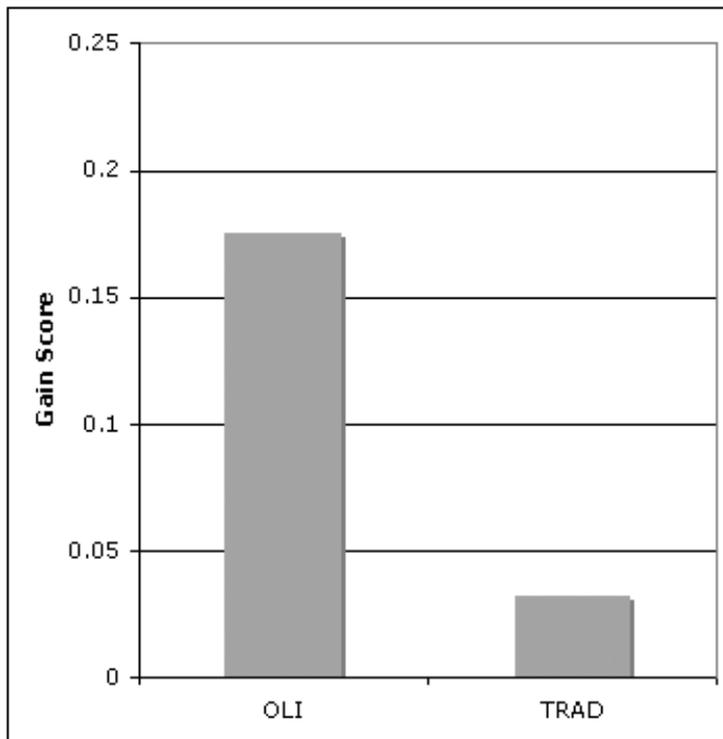
Accelerated Learning

In our most recent study (Spring 2007), we have explored an accelerated learning hypothesis – that students using the OLI-Statistics course can learn as much material in a shorter amount of time and with equal (or better) learning gains than students learning from traditional instruction. For this study, we invited students from the Carnegie Mellon introductory Statistics course to participate. From 68 volunteers, 22 students were randomly selected and agreed to use the OLI-Statistics course in blended mode, working through a full semester's material in about half the time (8 weeks instead of 15). 42 students were assigned to the traditional condition and served as the control group; 4 students dropped the course before it began. Students in the OLI accelerated course did not attend lecture or lab but rather worked in the online course and met with a statistics instructor twice a week to ask questions and give feedback. For these sessions, the instructor reviewed system-generated reports of students' learning in advance and then prepared discussion to fit their learning needs.

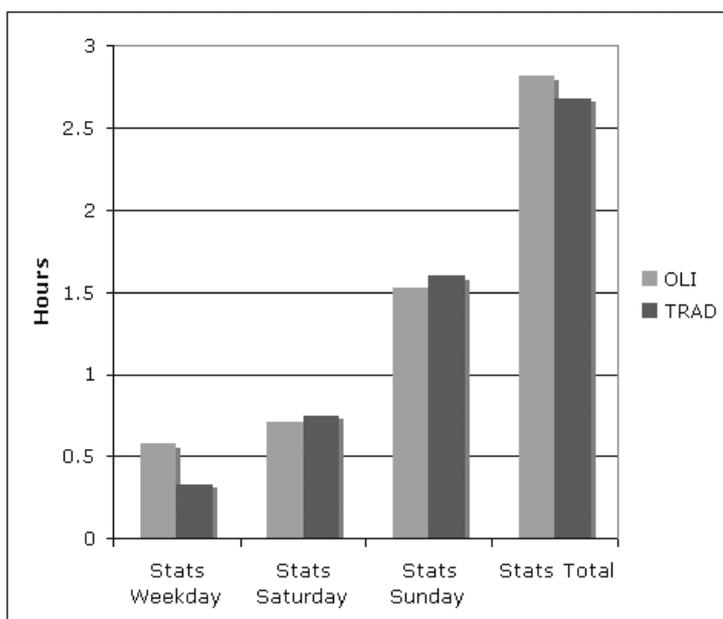
Students in the online course and in the traditional course took three paper midterms and a final exam; they also completed the CAOS test as a pre- and posttest. Additionally, for a one-week period, students in both courses documented the time they spent (outside of class) studying Statistics.

Results and Discussion

Of the 22 students in the OLI-Statistics accelerated course, 21 completed the work and took the final exam. Of the 42 students in the control condition, 40 took the final exam. These results suggest that the accelerated OLI-Statistics course did not lead to differential drop-out rates. Scores on the final exam showed higher performance for the accelerated OLI-Statistics students compared to the traditional class, regardless of whether the comparison group was the entire traditional class or the subset of volunteers serving as more similar controls. Scores on the CAOS tests revealed that learning gains (posttest minus pretest) for the accelerated OLI-Statistics students were significantly greater than for the traditional students (see Figure). Thus, we have shown that students can learn a full semester's material with OLI-Statistics in half a semester and perform better than traditional students after a full semester. Note that this result holds when we use either the entire traditional class as our comparison group or the 40 volunteers from the traditional class who volunteered but were not selected to participate in the accelerated OLI-Statistics course.



To test whether the OLI-Statistics students' greater learning gains, achieved in fewer weeks, were potentially the result of spending more out-of-class time on Statistics, we analyzed students' journal entries for the week they documented their study time outside of class. Note that the traditional students had more class-hours per week (4) compared to the accelerated OLI-Statistics students (2), so any out-of-class time would be in addition to a slightly different total for in-class time. Moreover, we would expect that working through the OLI-Statistics course would be more engaging (and challenging) than reading a textbook, but completing homework in the traditional course may offset this time. Indeed, students in the accelerated OLI-Statistics course and the traditional course spent approximately the same amount of time working on Statistics outside of class (see Figure).



We are currently conducting long term retention studies with both groups.

Devising a participatory open educational resources architecture for higher education in sub-Saharan Africa: a typological approach

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Abstract

‘Knowledge’ is becoming an increasingly important commodity in the economic, social and cultural development of a globalised world. As centres for innovation and the creation of knowledge, higher educational institutions in Africa must continually and progressively set the pace and direction for this development. Yet educational institutions and the ministries that support them struggle to enact the policies and processes that would facilitate Africa’s participation in the global ‘knowledge’ discourse. This paper suggests that, in the context of the limited resources available to Higher Education and Training institutions in Africa, evolving a Participatory Open Educational Resources Architecture has immense potential.

The idea of Open Educational Resources was born of several elements:

1. The technological advances enabling the creation, organisation, dissemination and utilisation of digital resources in support of changing pedagogical paradigms.
2. A paradigmatic shift in the intellectual copyright movement enabling and encouraging others to benefit from knowledge resources at little or no cost.
3. The notion that education is indeed a right and that steps must be taken to increase access to quality, affordable education opportunities.

In short, OER have the potential to contribute to the learning process what educators across the globe value as a guiding principle: a willingness to share knowledge.

In 2007, a report commissioned by the William and Flora Hewlett Foundation (a major supporter of the OER movement globally) and entitled ‘OER Achievements, Challenges, and New Opportunities’ defined OER as

...teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or repurposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. (2007, Atkins, Brown & Hammond)

This definition stands out from those that preceded it because it recognises that one can include in the broader OER movement workshop materials, policy documents, structured and unstructured online discussions and collaborations, teaching, learning and research tools – indeed any activity that is aimed at promoting free and open access to knowledge. This extends the possibilities of the OER movement well beyond the narrow ‘educational content’ focus some place on it. Moreover, variations in the definition of ‘OER’ (as a new

and dynamic phenomenon) should not become an obstruction. Indeed, the ongoing dialogue may in fact be beneficial so long as there continues to be an appreciation of the principles of openness and knowledge sharing that lie behind the movement as the discussion unfolds.

As a result of their late arrival into the OER movement, education institutions in Africa enter the arena having little to no experience in the OER evolutionary process and with an undefined trajectory for their participation. To date, issues pertaining to epistemological, ideological, cultural and social relevance as well as technology and pedagogy related challenges have largely been externally conceived. Consequently, it is necessary to configure a conceptual framework within which information and meaning converge to meet the higher-educational demands of learners, researchers and educators in Africa. Conceptualising a 'Participatory Open Educational Resources Architecture for Africa' would enable African institutions to contribute actively to the OER movement so that they drive and own the process in terms of its form, content, structure and orientation.

To guide this conceptualisation, the author is in the process of devising a detailed typology for the OER movement that seeks to decode the OER phenomenon and make it more accessible to stakeholders in Africa. The basis for devising the typology stems from a recognition that the promise of the OER movement resides not only in the digitised information itself, but also in developing and contextualising the methodological approaches and mechanisms that support, manage and ascribe meaning to it.

The typology considers four higher order categories or components that constitute the OER evolutionary process: Creation, Organisation, Dissemination and Utilisation of OER. These components have been derived from the field of Knowledge Management (KM) which also seeks to capitalise on the sharing of knowledge resources, albeit at an organisational level. A draft representation of this 'Participatory Open Educational Resources Architecture for Africa' (that has arisen from the author's research) is represented in Figure 1 below.



Figure 1. Participatory Open Educational Resources Architecture for Africa

Contained within this architecture are several 'activity sets' or elements that need to be considered. These elements are being used by the author as sub-categories in the development of the OER typology and once fully articulated, they will enable further decoding and description of the OER phenomenon. Although much could be written regarding each, by way of an introductory overview these sub-categories are:

1. Research – there is a need to undertake both pure and applied research into the OER phenomenon in order to inform and guide its application in the education sector in Africa.
2. Pedagogy – a key consideration for the creation and effective use of OER is to ensure that pedagogically sound teaching and learning paradigms are devised that are appropriate and context specific. In Sub-Saharan Africa this may include devising cost effective Open, Distance and eLearning (ODeL) programs that increase access to educational opportunities.
3. Technology Support – since OER are mainly created, organised, disseminated and used via Information and Communications Technology (ICT), it is important to ensure that appropriate technological infrastructure and support systems are in place.
4. Sensitisation – awareness raising needs to take place at all levels – within government ministries, among senior institutional management, educational practitioners, support organisations (NGOs and ICT developers for example), and crucially, among students.
5. Collaboration – easy to use systems are required for collaborative authoring of OER, for the sharing of experiences and expertise of others, for sharing OER policy frameworks, for sharing pedagogically sound OER content, and for developing and sharing applications that manage OER.
6. Capacity Enhancement and Training – there is a need to provide professional development opportunities in order to train people in the various aspects of the OER movement be this in the Creation of OER, the Organising of OER, the Disseminating of OER or Using OER effectively.
7. Policy Framework – without a strong policy framework at both national and institutional level the ability of the OER community in Sub-Saharan Africa to leverage the potential of the OER movement will be severely curtailed. Issues of Intellectual Property Rights (IPR), academic publication and progression, quality assurance, staff involvement and workloads, resource allocation, ICT strategy, and ODeL strategy will all require policy support.

These typological elements are not mutually exclusive. Rather they are highly interdependent as dynamic parts of the overall OER Architecture. For example, policy formulation may, in some contexts, depend on sensitisation, collaboration and capacity enhancement activities. Equally, capacity enhancement may, in some contexts, depend on policy and the technological infrastructure available.

In order to establish its validity and usefulness, the OER typology will be 'tested' on several OER initiatives in Africa. This requires the identification and inclusion of key stakeholders who form an African OER network of practitioners and will initially focus on Higher Education and Training institutions (as centres for innovation). This network – or more likely 'network of networks' – of those who seek to participate in the OER movement in Africa will be able to apply these typological elements to the development of a dynamic, rational and comprehensive OER strategy. Eventually this strategy may adopt a multi-sectoral approach (including public-private partnerships) as a way to combine the know-how and resources of each.

One such initiative is the 'Teacher Education in Sub-Saharan Africa' (TESSA) program. TESSA is a nascent OER initiative and a case in point for the potential of the wider OER movement in Sub-Saharan Africa. The TESSA program, among other things, seeks to

involve a network of teacher training institutions, working collaboratively, to improve the effectiveness of new systems of teacher education and training in highly diverse settings. This presents a significant challenge to those involved but its success will also provide significant rewards.

Research is underway regarding how closely the program implementation is aligned to the typological elements of the OER Architecture described above. As this research unfolds it will afford us a valuable opportunity to undertake important modelling for the OER movement in the Sub-Saharan African context. It will also enable us to consider the potential the OER movement has to address some of the fundamental development related challenges that exists across the African continent.

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A panel session proposal for OpenLearn 2007

Session title

Opening up education: removing barriers, fostering participation, and promoting sustainability

Session co-chairs and moderators

Toru Iiyoshi

Senior Scholar/Director, the Knowledge Media Laboratory, The Carnegie Foundation for the Advancement of Teaching

M. S. Vijay Kumar

Senior Associate Dean of Undergraduate Education & Director, the Office of Educational Innovation and Technology, Massachusetts Institute of Technology

Presenters

Andy Lane

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Diana Laurillard

Professor of Learning with Digital Technologies, The London Knowledge Lab, Institute of Education

Stuart D. Lee

Director of Computing Services, University of Oxford

Session description

Currently, there seems to be an abundance of 'open' educational initiatives, many with the potential to radically transform the ecology and economics of education. These initiatives address various pieces of the educational landscape, including infrastructure, tools, resources, practices, and knowledge.

Yet, despite the availability of tools and resources, we risk missing the 'transformative' opportunities from a wide range of perspectives—from improving teaching and learning in a single classroom to creating the necessary educational capacity for nation building. As a global educational community, we can benefit from a deeper understanding of how open educational tools and resources are being created and used, what local educational innovations and challenges are emerging, and how we can learn from and build upon each other's experience and knowledge.

The presenters will discuss opportunities, challenges, and synergies involved in enhancing educational quality and access through various open education efforts in the areas of technology, content, and knowledge. The panel discussion will also build on the outcomes from a collaborative publication project supported by the Carnegie Foundation,

entitled *Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge* (to be published by MIT Press in November 2007 with free electronic distribution online through Creative Commons: <http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=11309>). This publication of 30 essays by 40 prominent international thinkers and leaders in open education outlines successes, challenges, and opportunities for the entire education community. This collective effort specifically aims to: 1) identify the educational value proposition and implications of open education initiatives; 2) illuminate the micro and macro factors that would accelerate these initiatives towards having a positive impact on education; and 3) explore, as a community of practice and reflection, how we can iteratively and continuously improve the quality of teaching and learning through effective development and sharing of educational innovations and pedagogical knowledge.

Biographies

Toru Iiyoshi is a senior scholar at The Carnegie Foundation for the Advancement of Teaching where he serves as the director of the Knowledge Media Laboratory (KML). At the Foundation, he leads research and development efforts that take advantage of emerging technologies to enable educational institutions, programs, and faculty to transform the knowledge implicit in effective practice into ideas, theories, and resources that can be shared widely to advance teaching and student learning. Dr. Iiyoshi also works with various national and international initiatives and organisations in an advisory role to provide vision and leadership in the development and diffusion of innovative use of technology in education. Iiyoshi holds a visiting professor appointment at the Graduate School of Interdisciplinary Information Studies at the University of Tokyo.

M.S. Vijay Kumar is Senior Associate Dean of Undergraduate Education and Director of the Office of Educational Innovation and Technology at MIT. In this capacity, he influences the Institute's strategic focus on educational technology and provides leadership for efforts to support sustainable educational innovation. In his prior role at MIT as Assistant Provost and Director of Academic Computing, as well as at other institutions, Kumar provided leadership for units engaged in delivering infrastructure and services for the effective integration of information technology in education. Kumar is the Principal Investigator of O.K.I (Open Knowledge Initiative), a MIT-led collaborative project to develop an open architecture for enterprise educational applications. He is a member of the MIT Council on Educational Technology and the Advisory Committee of MIT OpenCourseWare (OCW). Kumar also serves as an advisor to India's National Knowledge Commission. Dr. Kumar's research, as well as his extensive engagement as advisor and consultant with professional organisations and academic institutions, are directed toward planning and implementing innovations for advancing educational quality and opportunity.

Andy Lane is Professor of Environmental Systems in the Technology Faculty at the United Kingdom Open University. His teaching and research spans the use of systems techniques, particularly diagramming, to help with the sense making, learning, and decision making required in complex situations. He has authored or co-authored many papers and educational materials in these areas. Previously, as Associate Dean and Dean in the Technology Faculty, he has been responsible for the planning and development of several new educational programs and practices. In 2006, he was appointed Director of The Open University's OpenLearn Initiative, which is making some of the University's large catalogue of educational materials freely available on the web.

Diana Laurillard is Professor of Learning with Digital Technologies at the London Knowledge Lab, Institute of Education. She was previously Head of the eLearning Strategy Unit for the UK government's Department for Education and Skills, and on the Visiting Committee on IT at Harvard University. Prior to that, she was Pro-Vice-Chancellor for learning technologies and teaching at The Open University. Her research is the substance of her book, *Rethinking University Teaching: A conversational framework for*

the effective use of learning technology. She is currently on the Board of the Observatory for Borderless HE, the Centre for Applied Research in Educational Technologies at the University of Cambridge, and the UNESCO Institute for IT in Education in Moscow, and is an external examiner at the University of Oxford.

Stuart D. Lee is the current Director of Computing Services at Oxford University, and also a member of the English Faculty at Oxford where he teaches medieval literature. His main areas of expertise are in elearning (which he has specialised in for 16 years) and digital collections. He has written books on digital imaging, electronic collection development, and was the director of the award-winning elearning project The Wilfred Owen Multimedia Digital Archive.

Widening participation in education through open educational resources

Andy Lane, The Open University

Making content freely available for people to use is technically easy to do. Making educational resources available for re-use under a Creative Commons-style license is emotionally harder to do because of the traditions of copyright and intellectual property rights that permeate the modern knowledge society. Making open educational resources accessible to the most disadvantaged groups in the world is also challenging, but readily achievable as the digital technologies of all types being developed and refined by multinational companies offer different and more affordable routes to such content. The most difficult part is ensuring that people can make any significant use or re-use out of the content and resources that may be available to them. In terms of open educational resources the question is, 'Who benefits and how do they benefit?' What conditions are needed to convert the vast number of browsing consumers of a wealth of variable information to serve functional needs, into many communities of learners seeking to transform themselves through education?

The Open University has begun to make some of its educational materials freely accessible in a Web-based environment called OpenLearn and, in doing so, is trying to advance open content delivery methods and technologies by:

1. Deploying leading-edge learning management tools for learner support;
2. Encouraging the creation of non-formal collaborative learning communities; and
3. Enhancing international research-based knowledge about modern pedagogies for higher education.

Drawing on its long experience of innovating and delivering supported learning to a mass market, both in the UK and increasingly abroad, the University expects to make a significant impact on both the quality and reach of open content delivery at an international level, as well as a major contribution to the electronic delivery of learning resources worldwide. One of the primary aims in doing so is to meet the learning needs of a wide range of people with differing levels of educational achievement, skills, and confidence. And it sees the key to widening participation as being the support of users of open educational resources through extensive networks of partners. The need is for a social economy, not a market economy, in education to empower all those involved, whether they are a teacher, a learner, or an employer of educated people. This chapter supports that argument based on the experience and impact of open universities in general and the UK Open University in particular.

Teaching as a learning process: the key to sustainable and effective open education

Diana Laurillard, London Knowledge Lab

The judgment of the value of learning technologies begins and ends with the value to learners, both current and potential. Technology can offer an abundance of tools, techniques, resources, and mechanisms to any enterprise, but education will use it best if it knows what it wants. Some impressive educational ambitions from which to challenge technology can be found, for example, in educational strategy documents. The United Nations's millennium goal for education is one that every nation inherits, and it provides the ultimate challenge to learning technology: 'To achieve universal primary education by 2015'.

How could this begin to be possible, unless we exploit learning technologies and the idea of open education to the limit? It requires a teaching community capable of building its expertise and multiplying its numbers at a fantastic growth rate.

Similarly, the demand for higher education across the globe continues to grow – one estimate is that it needs to open university a week somewhere to keep pace with the demand. Again, how could such expansion be contemplated without a technological solution?

Ubiquitous technology is a basic requirement, and the open technology chapters will tackle this. But effective use of the technology available ultimately stands or falls by human and organisational factors. The required acceleration of knowledge and understanding of 'learning afforded by technology' will only be possible in a teaching community that acts like a learning system – that makes knowledge of what it takes to learn explicit, adapts it, tests it, refines practice, reflects, rearticulates, and shares that new knowledge. In other words, teaching becomes problematised, innovative, and professional, taking research as its model.

So the micro factors that will do most to accelerate the growth of this new kind of teaching community are:

- the scope and nature of professional training for teachers at all levels of education
- knowledgeable leadership at institutional and national levels of education.
- research and development on technology-enhanced learning, carried out through partnerships between research labs, publishers, software houses and teachers to build the tools, resources, and learning design environments necessary
- a common systems architecture for learning and teaching
- common open standards for digital tools and resources.

The chapter will draw on a previous research project, SoURCE (Software, Use, Re-use and Customisation in Education), and a current learning design project (a user-oriented planner for learning analysis and design) to argue for a new generation of educational software developed through partnerships between research labs, publishers, and teachers. An open education approach would offer a new kind of proposition from publishers, not products but services, and a new business model to enable this to be sustainable.

'The gates are shut': technical and cultural barriers to open education

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In Thomas Hardy's *Jude the Obscure*, the 'hero', Jude Fawley, dreams of overcoming the social and cultural barriers of the day by rising above his social status and gaining a place in the University of Christminster (Oxford). Jude studies hard, in spite of his poor status, and achieves a level of academic ability well beyond, one assumes, the average students at the University. But Jude did not enjoy the privileges of class, and despite his hard work all his attempts to get a place at a college are rejected. In one letter, the Master of 'Biblioll' college declares: '...you will have a much better chance of success in life by remaining in your own sphere.' Destroyed by the rejection, Jude attempts to find solace in a local inn, only to be reminded of his rejection by another customer. He emerges into the University city at night:

At ten o'clock he came away, choosing a circuitous route homeward to pass the gates of the college whose head had just sent him the note. The gates were shut, and, by an impulse, he took from his pocket the lump of chalk which as a workman he usually carried there, and wrote along the wall:

'I HAVE UNDERSTANDING AS WELL AS YOU; I AM NOT INFERIOR TO YOU: YEA, WHO KNOWETH NOT SUCH THINGS AS THESE?' – Job xii. 3.

Jude's anger is understandable and reflects Hardy's own views of the elitist education system at the time. Thankfully, over the hundred or so years since the publication of Hardy's bleakest of novels, the barriers to entering University and education have been systematically removed. Education for all, matched by networks of schools, colleges, and universities has been a major political ambition of most developed countries. In the United Kingdom, for example, three major initiatives since the Second World War attest to this – the new Universities of the 1960s, The Open University which brought education to the masses via the medium of television and correspondence course, and the recent target by the Labour Government to reach a 50% participation rate by all school-leavers in higher education.

Yet a less utopian picture has emerged with the advent of the new technologies. The gates to education are closing, and the barriers within education are beginning to reappear. There are two reasons for this which, this chapter will argue, both stem from the commercialisation of education – namely technical and cultural.

Technically, the clearest example of this lies in the commercial learning management system (i.e., virtual learning environment). These systems, designed to hold learning support material, enforce a series of barriers and checks to the ambitions of open education. By their licensing, institutions who choose to deposit their material within these systems suddenly find that any attempts to open up the content to outsiders can be prohibitive. Moreover, within the systems users find themselves pigeon-holed into restricting modules, often at the tyranny of the student record system, which deters interdisciplinary exploration and study. Culturally, academics are also reluctant to make their course material readily available via emerging learning object repositories. Here the reasons are perhaps more understandable: fear of copyright infringements, losing control of material, losing credit for the material, minimal career incentives for making teaching material available, the emerging competition between universities for students, and many others.

This chapter will look at both these issues. Analysing the approach of commercial learning management systems will show how the restrictions (e.g., technical, financial, and legal) imposed by the vendors actively discourages open education. It will propose that the only solution to this is to claim back the content and the systems via open source technologies. Moreover, using a recent study of academic attitudes to making learning material more readily available (conducted by Oxford), it will look at the cultural barriers to sharing and how these may begin to be addressed.

An OER research agenda: reflections of an international Community of Interest

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Abstract

In early 2006, an international Community of Interest on Open Educational Resources discussed building a research agenda for OER. Community members were asked to identify research questions and a list of 110 questions was created and sorted into focus areas: http://oerwiki.iiep-unesco.org/index.php?title=OER_research_questions_longlist. Members were then asked to identify their priority research questions. This resulted in a list of 25 questions.

In early 2007, the same Community was polled to identify the priority issues that need to be addressed to enable the OER movement, and which stakeholders should take the lead. Research was one of the issues identified by respondents.

Together these two exercises provide input from a Community of more than 600 members from 98 countries into the reflection upon what research is needed on OER and who should undertake it.

Learning about learning in Wikiversity through action research

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Abstract

This research is about Wikiversity, a wiki-based Wikimedia project about learning. Issues addressed are around knowledge construction and facilitating learning, specifically collaborative learning and experiential learning – or ‘learning by doing’. Action research is proposed as a congruent methodology for researching wikis, emphasising the participatory paradigm within which they work, and is argued to be akin to research done the ‘wiki way’. It is claimed that a deeper understanding of participatory technologically-mediated learning environments can be enriched by this kind of research, and some potential challenges with research done in this wiki way are also outlined.

Introduction

My research focuses on Wikiversity – a sister project of Wikipedia, and part of the Wikimedia family of projects – all of which are run on a wiki platform, ie a website which is openly editable. Wikiversity is a project to 1) host and develop educational materials, 2) to design and facilitate learning activities and communities around these or other materials, and 3) to host and foster research projects and materials. It is a project which I have been involved in from its definition and planning stage, to its setting up as a Wikimedia project in August 2006, and continuing through to the present – though the overall definition, structuring and planning of Wikiversity is a still-continuing project.

The questions I am (or I should say: ‘we are’) asking are: how appropriate is the wiki model in both the production of educational materials and the creation of an educational space, in which people can learn collaboratively – and how does the wiki context mediate this activity? How can Wikiversity engage people in both the definition and the pursuit of learning activities that are meaningful and useful to them? Crucially, in a participatory learning environment – in which we are participants ourselves – how can we evaluate the extent to which we ourselves facilitate others’ learning? And how can we research these kinds of spaces more effectively, and make this research more relevant to the practice and needs of its participants?

Researching Wikiversity

I will focus here on this last question about research. I wish to propose that action research is a particularly congruent methodology to explore learning in this way, and in this wiki space. I believe that action research (particularly in its participatory aspects) is akin to research done the ‘wiki way’ – involving the participation of a community of practitioners, and the continual feeding of reflection (discussion) back into the definition, modification, and development of the work in question. It is this participatory paradigm

(Reason, Bradbury 2006) that behoves me to modify, above, the notion of 'my' research towards 'our' research – though, of course, I have had to make it clear that this research is, for me, in part towards a PhD, which sets up an interplay of interests, needs, and requirements between my academic institution (the University of Manchester) and Wikiversity/Wikimedia. This research will also involve the building and/or reconfiguration of variously involved networks around the various initiatives that exist within the broader Open Educational Resources (OER) movement, acknowledging that this type of research needs to be open to sometimes quite loose, amorphous, and even ambiguous modes of participation (Foth 2006).

However, focusing on the question(s) of research is not to ignore the learning aspects of Wikiversity – on the contrary, this research is fundamentally concerned with the practice of facilitating learning in Wikiversity. I am particularly interested here in how participants' experiences can be reflected upon and shared within such educational projects, and how these experiences can compose the predominant learning material, and perhaps even the curriculum, of this community of practice (Wenger 2007). Another key element is finding what pedagogical theories and frameworks can inform and guide the ongoing work – Wikiversity is exploring a 'learning by doing' model (amongst others), but this model is not yet fully understood or even followed in practice.

Of course, teasing apart the notion of the 'wiki way' is at the core of understanding how learning can be provided for within this medium – as well as any other activity, such as research. The wiki way is as much a culture and practice unto itself – which needs to be negotiated with the identity of each participant. An added dimension to this notion that has been raised within the Wikiversity community with respect to research is whether it would be desirable to mark out specific spaces for researchers to carry out or upload their research which would be editable within that sub-community only. This initiative is by no means operational, or fully discussed, but it reflects on the tensions that exist between researchers' possible needs and the openly editable model of a wiki (ie the wiki way). Wikis have been used in research settings (eg. Buffa, Sander, Grattarola 2004) – alongside a host of other business, industry, and educational settings – but I don't yet know of a research community that works on more or less the same open principles as Wikipedia (though I would welcome other parallel initiatives).

Any reflective look at an educational practice must examine the means and conceptualisations by which knowledge is constructed (Scardamalia, Bereiter 2003), and it is in this regard that I find a wiki to be a particularly compelling medium. A wiki is a fundamentally discursive medium (Ebersbach, Glaser 2004), and, I believe, it is through the discourse that it generates that its knowledge can be both defined and validated. I further believe that action research has a facilitating role to play in this discourse, and in the continual definition of the parameters of the discussion (Carr, Kemmis 1986).

Conclusions

Any conclusions about learning, knowledge, and identity in Wikiversity are, at this stage, quite premature. I would characterise Wikiversity to be at a stage where it is still defining and refining its goals, testing its strengths and weaknesses, and exploring how learning can be provided for within Wikiversity – essentially, learning about learning. This research itself is designed to promote such a learning experience for all involved, and to understand this learning in a way that is relevant to, and enriches the experience of, its participants. In understanding the ways in which these open, participatory learning environments really work, there needs to be in-depth research done amongst different interest groups and projects to enrich our understanding of education in these evolving, technologically-mediated contexts (Atkins, Seely Brown, Hammond 2007), and I fervently hope that this research can play a role both in provoking and sustaining the timely discussions about learning and technology in this new century.

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Learner-Generated Contexts: sustainable learning pathways through open content

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Abstract

The rapid increase in the variety and availability of resources and tools that enable people to easily create and publish their own materials as well as to access those created by others extends the capacity for learning context creation beyond teachers, academics, designers and policy makers. It also challenges our existing pedagogies. In this paper we suggest that one of the challenges that arises from the OpenLearn initiative is that of finding ways in which technology can support learners to effectively create their own learning contexts. We also suggest that the successful creation of Learner Generated Contexts can address concerns about the sustainability of OpenLearning. Our intention is to seed a wide-ranging debate at the OpenLearn conference.

What do we mean by Learner-Generated Contexts?

The proposal of a Learner Generated Context arose initially from the suggestion that an educational context can be described as a learner-centric ecology of resources and that a learner-generated context is one in which a user or group of users collaboratively marshal the available resources to create an ecology that meets their needs (see Luckin, R. 2006; Luckin, du Boulay, Smith, Underwood, Fitzpatrick, Holmberg, Kerawalla, Tunley, Brewster & Pearce, 2005; Luckin, Shurville & Browne, 2007 for more detail on the learner-centric ecology of resources framework and for more detailed examples). Through the discussions of the Learner Generated Context group¹ fresh perspectives on this contention have developed. For example, both spatial and process issues emerge. These could be described as Changing the learning context and generating learning spaces, and Changing the learning process and the learning context.

In this paper we consider the alternative perspectives of Learner Generated Contexts (LGC) and resolve these into a research agenda that is complementary to the issues highlighted in the Open Learn call. In particular the concerns the call raises about the sustainability of the open learning enterprise.

¹ The LGC group was formed at a workshop in Bath in March 2007 – it's membership is interdisciplinary and is represented in the author list for this paper

Why Learner-Generated Contexts?

The motivation for the formation of the LGC group came from a shared excitement about the growth of 'User Generated Content' such as that to be found on YouTube and Flickr. However User Generated Content was already being sufficiently hyped as the public embrace new Digital Media. Our excitement was fuelled by the thought that the time was ripe for a substantive debate about the systemic value of User-Generated Content and Web 2.0.

Why now?

The LGC group share common concerns to ensure that learning is a participatory experience that is about: participative technology, participative education and participative democracy. The current popularity amongst learners for the creation and publication of their own material, combined with the open content and open source initiatives offer the tools for increased educational democracy. These tools support the potential for the boundaries to be redrawn between learners and teachers, formal and informal education and the producers and consumers of knowledge. However, learners still need support to scaffold their skills and understanding (Wood, Bruner & Ross, 1976) and yet many educational practitioners feel technically ill equipped to act as more able peers or mentors in this process.

Definitions and issues

Through formulating the following working definition of a Learner-Generated Context, cross-disciplinary issues and activities for further investigations can be identified.

'A Learner Generated Context can be defined as a context created by people interacting together with a common, self-defined learning goal. The key aspect of Learner Generated Contexts is that they are generated through the enterprise of those who would previously have been consumers in a context created for them'

Key issues

- Learners as creators not consumers
- The changing roles of educational practitioners: what type of 'ogy: Pedagogy, Andragogy, Heutagogy or something new?
- The transition from learning as regulated practice to learning as participation
- Learning as a collaborative activity taking place in locations that self-review and are self-validating
- Understanding purpose in learning design
- The role of narrative in learning
- Environments as physical, social and cognitive
- The ability of learners to take learning devices and appropriate them for their own learning needs
- The ability of learners to take ownership of their physical learning environment and enhance learning and creativity

Key activities

- The creation and maintenance of new relevant learning contexts
- Learning design to allow learners to create their own context or space: Co-Configuration, co-creation, co-design of learning
- The development of interest-driven learner-centred approaches that enable learners to own both their learning and their actions in the real world
- Identifying a range of learning strategies enabling the design of better learning software.
- The use of learner-centred and participatory design to understand learning contexts as 'ecologies of resources'
- The use of technology to support the ability of communities to define their own learning needs
- The use of technology to generate learning environments which will enable the more active learning roles of 'citizens' and 'employees'
- The provision of digital media tools that enable socially inclusive learning

Examples of current Learner Generated Context (LGC) activity

LGC could be about usefully linking various Contexts of Learning as a way to integrate informal, non-formal & formal learning and to widen participation and social inclusion. LGC could be a way of creating a framework for lifelong learning through a 'perpetual beta' (O'Reilly, 2005)

Examples from current practice that demonstrate aspects of Learner-Generated Contexts include:

The Participatory Learning Workshop approach that involves the construction of rich picture narratives of individual and community needs in order to develop outcomes concerned with both individual and as individuals and community. Development (see Day, 2003; Menou & Day, 2005)

'The design of flexible technology-saturated learning spaces in which practitioners can develop multi-media approaches to teaching and learners can interact with the learning space in novel and innovative ways (see Childs, Hamilton, Morri and Johnston, 2006).

Self-organised learning practice using Web 2.0 tools, such as that demonstrated by Kruger (2006) and depicted in Figure 1

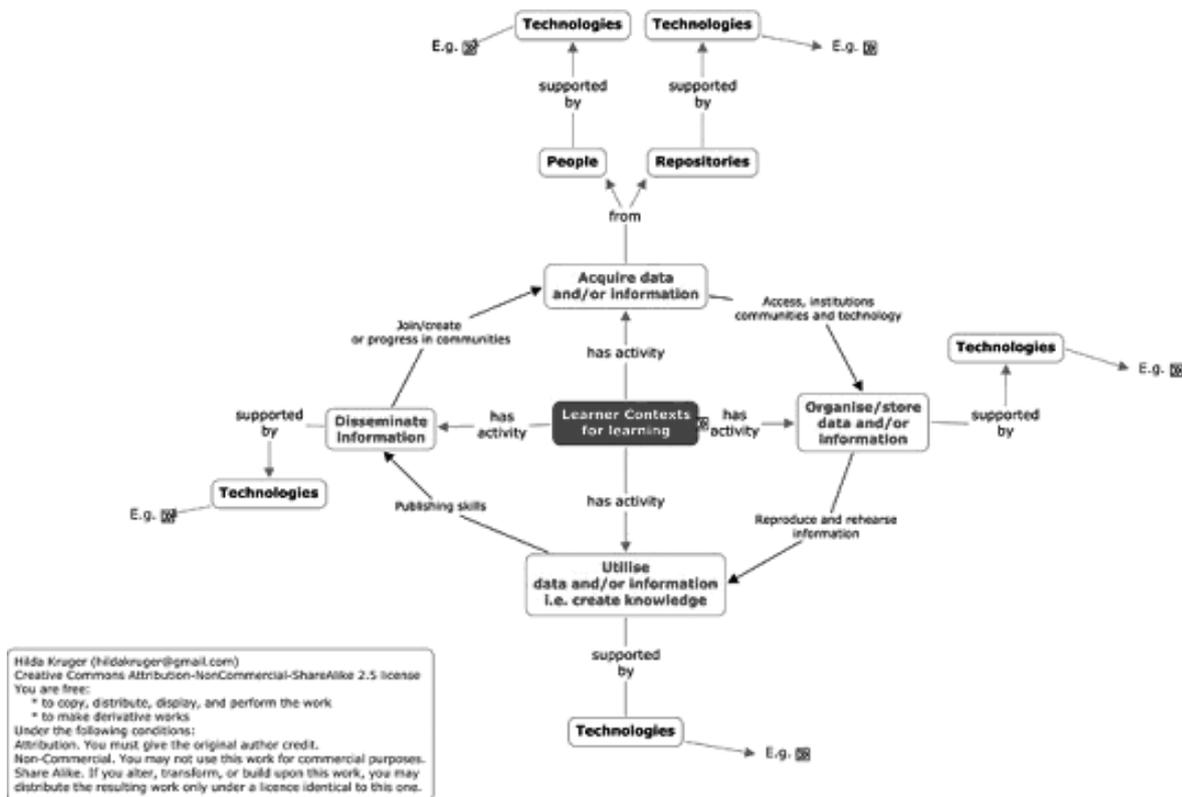


Figure 1. Self-organised learning practice using Web 2.0 tools

What next?

Our purpose in debating these issues is to get beyond the institutional, pedagogical, professional and educational barriers that block both the affordances of new technologies being realised and the learning that comes from allowing everyone's curiosity to answer the questions that naturally arise as we live in the world. Rather than just relying on educational institutions to generate content, learners could generate sustainable content and learning pathways in newly identified contexts.

A possible research agenda

The agenda is not about technology use per se. It is about contextualising learning before it is supported with technology. Nonetheless the issues we have highlighted have been prompted by thinking about the affordances and potentials of a range of technologies and practice; web 2.0, m-learning, participative media, learning design and learning space design. In order to develop a research agenda for future research and development we propose that the following three questions provide a useful focus:

1. How can we facilitate the development of context-based models as the organising principle for designing learning?
2. How should we re-conceptualise the relationship between informal learning and formal education?
3. How can we integrate the roles of learners as consumers and producers in the learning process?

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Learning from ‘OpenLearner-interactions’ using digital research techniques

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Abstract

This research explores digital technologies such as a ‘non-intrusive’ eye-tracking device, remote desktop sharing tool, screen capture software, digital video cameras, webcams, etc., to find out whether integrated analysis of the data from these technologies can provide information of ‘learning’ interactions in the context of OpenLearn. The data from four participants of the two small studies (i.e. an *eye-tracking* study and a *remote observation* study) seem to offer evidence for telling the difference between users flicking through the web pages in ‘browsing’ mode, and when they are more engaged in ‘learning’ mode. This research provides specifications for researching the pedagogical value of capturing online learning interactions in the form of digital videos and logs.

Introduction

The flexibility in accessing learning materials on OpenLearn means that we need to understand how different users (e.g. differing in age, in location, in qualifications) with different purposes (information-seeking, studying a course) interact with online resources. In particular we would like to be able to tell whether users are ‘learning’ from their interactions with the site. Learner-computer interaction may be indicated by variety of sources such as logs, interviews, observations, and recorded screen activities (see for example San Diego & Aczel, 2007; Sheard, Ceddia, & Hurst, 2003). In this research we considered how we could extend more conventional techniques by carrying out a desk study of tools for capture of interaction data with web sites and performed initial user trials to assess behaviour models using eye-tracking and other observation as appropriate.

Researching ‘OpenLearners’: aims and rationale

For this study the aim was to see whether it is possible to tell the difference between users flicking through the pages in ‘browsing’ mode, and when they are more engaged in ‘learning’ mode. If such difference can be observed it may then be feasible to develop techniques to research the majority of online users who will not be available for laboratory based studies. One possible way to do this is to learn from eye-tracking experiences, carried out locally, and match them to the observations that can be made remotely, and the information logs in the OpenLearn systems. This research investigates the extent to

which observed behaviour can be said to correspond to some patterns of behaviour; and whether any of these patterns can be associated to 'learning' interactions. Eventually, this research seeks to provide specifications on how one can make an indirect study of possible behaviour by examining logged actions on the OpenLearn systems to classify user behaviour based on models for learning interaction within OpenLearn.

Eye-tracking and remote observation studies

Four users, who were aware of the OpenLearn site but had limited or no experience with any of the course materials, participated in a two-part study. The set of techniques used in the first part was established and tested based on a larger research project (San Diego and Aczel, 2007). The second part used a technique for observing and capturing users' interactions remotely that had been tested several times but not previously applied in user studies. The technologies and the observation techniques used for the two studies are given below.

Eye tracking study (two participants) and remote study (two participants)

- ClearView™ Eye-tracking system, Tobii™ Eye tracker, digital video camera.
- Combined eye-tracking and think-aloud/self-explanation.
- Webcams, Laptop, Netviewer™ (remote desktop sharing technology), Camtasia™ (screen capture technology).
- Think-aloud technique/self-explanation.

The instructions given in completing tasks varied slightly to allow for differences in technologies and procedures required for capturing data. Three tasks were refined, tested, and used in the two studies given in the following order.

1. 'Browse and search' task – Users were asked to browse through some of the contents of OpenLearn for 10 minutes.
2. 'Study' task – Users were asked to go through given content and complete the first set of questions specified within that content within 15 minutes.
3. 'Study-choice' task – Users were asked **to study certain content of their choice for 10 minutes.**

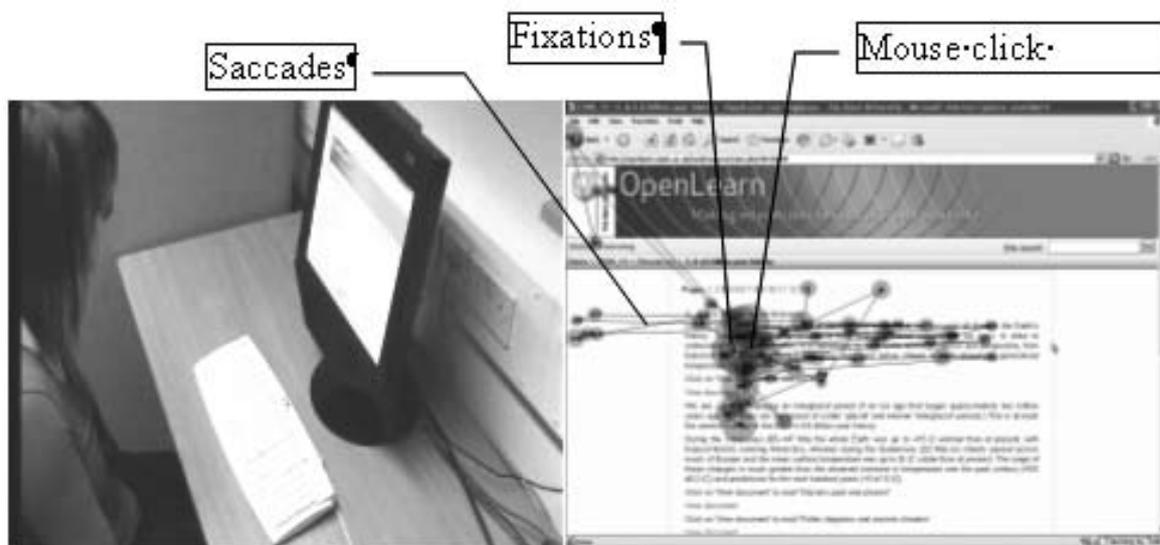


Figure 1. A user video (left) and an eye-tracking video (right) played in sync (On the figure: Saccades as line – the path the eye took across the screen; Fixation as blobs – the place where the eye dwelled on the part of a screen, mouse clicks as 'x' marks – location of clicks)



Figure 2. A remote user video (left) recorded onto the researcher's computer. The researcher (right) watched the user's interaction in 'near-synchronous' time

Model of OpenLearn interactions

Given three different tasks, it seems that different forms of user behaviour can be seen that suggest a difference between 'browsing' and 'learning'. There is a difference in search strategies that participants use when they are involved with the different tasks.

An extract of a user's talk while completing the 'browsing task'.

The user looked at the range of topics (00:00:46:15) 'Oh I'm torn between going for something that interest me and going for something that I think might be of use to me... I'll combine the two and go for 'Science and Nature''

The user then scrolled up and down the list of sub topics and pausing when (00:01:01:18) 'Nutrition. Vitamins and Minerals', 'Evolution through Natural Selection'... that looks interesting...'

The user looked at another sub-topic then decided to look at the first choice (00:01:30:00) 'Ok... I'm tempted by both of them but I know more about earthquakes than I do about evolution... So I'm going to look at evolution first.'

Examples of a user's behaviour associated with the tasks are shown in Figure 1. These forms of interaction may possibly represent some of the typical behaviour that a user might engage with OpenLearn contents.

Browsing behaviour: Typical user behaviour based on the browsing task, in browsing includes fast movement of mouse actions, scrolling up and down, pausing at several occasions, flicking through different pages, going back to a page previously visited, scrolling up and down this page, then slow movement of mouse actions. In eye movements, this can be represented by ballistic movements of the eyes which do not follow a specific pattern of fixation on contents within a webpage.

Study behaviour: Typical 'studying' behaviour based on the 'study task', may be indicated by a 'slow' flicking of webpages in a 'sequence' following a course content design. Slow movement of mouse actions and visiting of related pages. Eye movement as probable indication of 'reading' may be represented by a 'worm-like' saccadic movement from left to right. This may be accompanied by mouse-movements that users use as index of attention (c.f. San Diego and Aczel, 2007).

The 'study-choice' task illustrated both 'browsing' behaviour, described above, when the user was choosing content then shifted to a 'studying' behaviour when the user decided to go through a chosen content.

Reflections

The purpose of this research is to investigate whether data collected to assess behaviour models using digital techniques can provide indications of learning-interactions with OpenLearn. The research findings are tentative because of the small number of users and time. Below are some of the insights in researching OpenLearners using eye-tracking and remote observation studies.

Although, digital technologies may offer possibilities to research learning-interactions there are many challenges that need to be addressed in future research. Among others, for example, ethical considerations for remote observation studies can be more complicated than the ethics concerning traditional observation. Trust and rapport with participants may not be easy to establish due to the 'physical' absence of the researcher. There are methodological challenges such as reliance on logs, for example, duration of website interaction without the presence of user video capture, may not really represent an actual time of interaction; as users may not be in front of their screen during those logs.

Also, initial findings suggest that although the contents may have been designed to follow a certain pedagogic sequence, Open Learners may not follow the same sequence. For example, two users in the study 'jumped' to the webpage where the assessment questions are. It seemed that the users performed some sort of 'answer searching' strategy. It would be of interest to provide a visualisation tool that could show a representation of the perceived pedagogic sequence of learner interaction with a course material as intended by course designers and the visual representation of actual user interaction based on logs (Sheard et al., 2003). In those cases where users are not constrained to specific instructions in performing interactions, mismatch between these visualisations might provide a way to adapt the design of the sequence of online learning materials.

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Impact of Open Educational Resources in The Netherlands

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Abstract

A goal of the Open Educational Resources (OpenER) project at the Open Universiteit Nederland is to use open educational resources to increase participation in higher education through offering materials derived from existing independent study course materials. To determine whether this is achieved, several measurements are carried out. This paper reports on the first results.

Introduction

In line with the Lisbon agenda of the European Union to increase the competitiveness of Europe's economy, the Dutch government formulated ambitious objectives for increased participation in higher education. The OpenER project tests whether open educational resources can play a role in increasing participation through offering materials derived from existing independent study course materials. OpenER lets learners get acquainted with higher education and helps them gain experiences that boost their self-confidence and motivation to cross the threshold to formal higher education. OpenER is the 'appetiser', the enticement for further learning. To enhance the effects OpenER will also offer opportunities for – formal – testing.

OpenER will offer at least 16 courses, each approximated 1 EC, almost all in Dutch. The first courses were published in December 2006 with 12 courses currently available. The main publishing format is a combination of html pages and PDF documents. One course is fully published on html and another uses the virtual learning environment Moodle. The project will end in December 2007.

To determine whether the goals are achieved, several measurements are carried out. This paper reports on the first results.

Measurements

Seeing the project's aim, the OpenEr's target group is primarily those people who did not successfully attend higher education. More specifically, these are persons who:

- participate in the labour process or should be able to do so
- never finished higher education
- meet at least one of the following conditions
- finished a vocational training, eventually extended with follow-up courses and/or working experience
- finished some form of secondary education.

As of August 2007, the site has attracted over 260,000 unique visitors. Communication around the launch of the site was targeted at independent learners. No attention was given to educator-reuse of materials.

Although the website is not formatted as a marketing site for the Open Universiteit Nederland, it hopes to attract more customers with this experiment.

In February 2007, a web survey was accessible from the website of the OpenER project. To attract attention to this feature, all people who at that time had registered (some 2500 persons) were sent an email. As of May 15, 344 forms were submitted.

The survey contained 14 questions, divided into four categories:

- personal data
- data of visit
- use of material
- study plans and effect of OpenER on these.

Results

Category: personal data

- 95% of the population were in the age of 18–64. So the majority of the people potentially belong to the working population.
- 71% of the population were in the age of 25–55 (not potentially in either initial (higher) education or pre-retirement period of their life)
- 60% were female.
- 43% did not participate in higher education before. These people belong to the target group of this experiment.

Category: data of visit

- Respondents were informed about the site (more choices were possible) through:
 - printed media: 32%
 - radio or television: 17%
 - the website of The Open University: 44%
 - other websites: 12%
- 80% visited the site more than once
- Visitors came to the site to (more choices were possible):
 - use the material in their own courses: 5%. This reflects the communication efforts, not targeted to this group.
 - follow a free course: 64%.
 - test if they are able to cope with university courses: 23%.
 - try out different domains: 38%.
 - try out a study at the Open Universiteit Nederland: 43%. This is promising for an increase in sales of regular courses.

Category: use of material

- 20% did not look through any course
- 37% browsed through a course
- 43% studied a course

Category: study plans and effect of OpenER on these

- 75% is currently not involved in any formal learning trajectory
- 18% is currently involved in some form of higher education
- 16% has plans for starting a formal study in higher education. This group is potentially contributing to the result of this project.
- 38% has plans for buying courses on the level of higher education. This group also contributes to the result of the project.
- 71% indicated that this project affects their further study plans.

Overall, these first results indicate that the project is succeeding in reaching its target audience and goals. The data give us insights in the background of the visitors. The question of how representative these results are remains unanswered. For this, other and more intensive measurements will be undertaken. On several places in the courses we have lately placed little surveys to find out more about reasons users have to quit a course or to finish a course. Another measurements to be undertaken later should give us more insight if users really make the step to buy courses or submit for a formal trajectory at The Open University.

The first results are encouraging and give no reason to change the project. It also supports the decision to continue with the project after 2007, but then as part of the 'regular business'.

The whole is more than the sum of the parts: pathways and programmes for Open Learners in psychology

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Abstract

The Personalised, Integrated, Learning Support (PILS) Centre of Excellence in Teaching and Learning (CETL) has been involved in the research and development of support materials to help students plan their studies and find their way through The Open University's psychology programme. Website materials developed by the PILS/CETL for enquirers and registered students could be used by OpenLearners to better plan their learning and find pathways through programmes of study in psychology. This paper and presentation identifies how the lessons learned from, and the materials developed by the PILS/CETL could be applied to support learners studying psychology in an OpenLearn context.

In 2004 a collaborative project was initiated by Student Services, the Social Sciences and Science faculties to help students make informed decisions about planning a coherent study profile and to support learning and employability within the context of a subject area or programme of study – using chemistry and psychology as pilot test beds for activities which might be mainstreamed more generally.

This was extended and developed into a successful bid to the English higher education funding council to establish a Centre for Excellence in Teaching and Learning (CETL) in Personalised Integrated Learning Support (PILS). This provides £2.5 million over 5 years from 2005 to 2010 to enhance learner support relevant to students' chosen subject/programme of study using a blend of printed and electronic media and support provided by associate lecturers (tutors) and other academic and advisory staff

One of the aims of the PILS/CETL is to tailor support to the needs of the individual student, taking a holistic view of the learning journey from enquiry to completion of study. Key to this is the recognition that most students have a longer term orientation than a one-off course. The subject area, rather than the individual course, is seen as the means of developing a sense of membership and community of students.

Overall 85% of students responding to the OU annual courses survey indicated that they were studying their current course as part of a programme of learning.

The PILS/CETL materials for the psychology programme have provided support materials for both enquirers and students to help them better plan their studies through the psychology programme courses. This resource has enabled students to tailor their learning to meet their own needs and priorities as distance learners and to build on their existing learning and experience.

A psychology course choice booklet has been produced to support psychology students through their studies. Building on this two websites have been developed one for enquirers and one for students. The websites not only help students to plan their studies, they contain additional materials that support students to make better choices about the courses they should study next. These materials were developed in response to students request to be better informed about the pathways through the different psychology programmes at undergraduate and post graduate levels. Evaluation of these materials by students has been positive.

Course tasters and Are you ready documents have been developed for psychology programme courses. Additionally, specific support materials that map the methods used across the main psychology programme, for referencing and concept mapping are currently being developed to support the OU's psychology student community and meet their individual needs.

At present OpenLearn provides a course based approach for its learners with little to provide links or individualised and integrated support for learners who have chosen to study psychology. Using the PILS/CETL approach and tailoring some of the materials for the OpenLearn psychology course content could provide OpenLearners with a guided interactive approach that would support their study and allow them to plan informed pathways through their psychological studies. This could support sustainability for open educational resources that has a wider application than for those learners wishing to follow psychology pathways. It could provide interactive support and materials to enable learners to access their learning at both a course and subject level. If tracked information about user's initial and continuing learning needs and experiences with open content could be gathered. Finally such an initiative could provide a method and model for embedding open learning content into educational programmes where links from OpenLearn, to enquirer and then to student could be developed and investigated.

Creating Open Educational Resources: a workshop

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Abstract

This session aims to provide an opportunity for conference participants to learn about and share their knowledge and expertise in the creation of Open Educational Resources (OERs). In the first part of the session, the convenors will share their experience from the OpenLearn project, describing some examples from different disciplines and topic areas, with a view to illustrating broad areas of concern as well as opportunities for re-use and repurposing. The main part of the session, however, will offer participants the opportunity to co-create an OER, share their views and experiences and discuss the benefits, limitations and issues they envisage.

Format

Workshop.

Duration

1½ hours (to allow enough time to cover the three sections of the workshop).

Aims

1. To share some of the expertise gathered by OpenLearn academics in respect of the practice of creating OERs and, thus, help to promote OpenLearn and OERs
2. To provide a forum for conference participants both novice and expert to learn about and share their knowledge of creating OERs
3. To foster discussion and community ties amongst conference participants

Abstract

This session aims to provide an opportunity for conference participants to learn about and share their knowledge and expertise in creating Open Educational Resources (OERs). This session will be of value to both novices and experts. Whilst some attention will be given to the specific technologies and platform used on OpenLearn, these will be approached from a pedagogical perspective, i.e. the focus will be on practical questions of interest to educators using such tools and only as appropriate to illustrate particular points.

OERs are being made available freely for worldwide use by a growing number of institutions. OpenLearn is one such initiative (launched 25 October 2006) and access continues to increase. OpenLearn combines the twin sites of the LearningSpace and the LabSpace. The LearningSpace is aimed mainly at learners while the LabSpace is aimed mainly at educators. The focus of this session is on the creation of OERs for the LearningSpace and the identification of key elements of Open Educational Resources (OERs) with reference to the wider eLearning context.

In the first part of the session, the convenors will share their own experience of OpenLearn. Each convenor will, in turn, present a short selection of examples taken from the disciplines within their own area of expertise and/or practice within OpenLearn, followed by a short summary to highlight the broad areas of concern as well as some opportunities for re-use and repurposing.

The main part of the session, however, will offer participants the opportunity to share their own views and experiences whilst co-creating a sample OpenLearn OER. The audience will be split into groups and given a twofold task. Firstly, they will be asked to examine and discuss an Open University extract or OpenLearn unit available for repurposing and prepare an outline to guide the repurposing work. The second stage of the task will focus on a discussion of the benefits, limitations and issues that may arise.

The final part of the session will consist of a plenary debriefing, when participants will be asked to share group solutions and ideas with each other. This will provide an opportunity to discuss areas of concern, issues that arise from the activity and more broadly from the experience of co-creating a sample OpenLearn OER.

Finding your way to an open online learning community

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Abstract

Giving away educational materials is noble, but the materials are generally incomplete and unsuitable for good online learning. The OpenER project at the Open Universiteit Nederland makes 16 short courses, developed originally for self-study, freely available from the website www.opener.ou.nl. This paper sketches the first steps towards an online learning environment for such learning.

Current situation

Traditional educational resources are being recycled to open educational resources. Unfortunately, they are just that: Resources. More is needed to make them 'open educational'. Education involves different forms of student-teacher, student-expert or student-student interaction and not just student-resource. Most current open educational resources are upgraded online forums or libraries. The following scenario sketches the typical hurdles for a learner.

Scenario: Carol in 2007

To improve her IT-skills, Carol has chosen Initial programming in Java, offered as open educational resource. Working on assignment 2.2, she cannot get the Java program running. Neither the text accompanying the assignment nor the solution at the chapter's end helps. Carol decides to pose the problem on the course's online forum. After several clicks (new browser, URL, course, etc) she's there. Unfortunately, the two questions she posted last week were still unanswered and only 5 visitors looked at her questions. Carol hesitates: What's the use? Since she has no alternative, she starts: 'Question 2.6 in chapter 2.2 in Initial Programming gives a solution different from mine. I can't find my mistake. My solution is...'. After posting this, she clicks around to other posts for other

courses. She finds a nice applet on another site illustrating some programming concepts in the course and wants to share this, but because of the low number of visitors she sees no use in sharing this knowledge. Carol is disappointed. Learning should be more than reading. She decides to ask a colleague at work the next day for help, but for now she is stuck and cannot proceed.

This scenario illustrates the following learner hurdles:

- Several clicks are needed to reach the forum. Carol has to leave the learning context and go to a new environment.
- There are few visitors and therefore, the chance questions will be answered is minimal; discouraging knowledge sharing.
- Because the question context is not present, it has to be formulated in the question, leading to cumbersome formulations and browsing between forum and learning material and back.

Ultimate situation

To sketch an ultimate situation where the hurdles of the current situation are not present, let's see where Carol is in 10 years.

Scenario: Carol in 2017

To improve her IT-skills, Carol has chosen Initial programming in Java, offered as open educational resource. Working on assignment 2.2, she cannot get the Java program running. Looking at the solution (one click away as a popup next to her solution) she doesn't see her mistake. Several visitors before her left notes and assumptions about their experiences there. Reading them, she gets an idea about what went wrong, but wants to check this. An awareness widget on the screen shows six peers online who have indicated they have studied the course and are willing to assist others. Carol connects to one (rated as expert by others) and discusses her idea. During these discussions, they come up with an alternative solution. They immediately post this at the relevant place for other learners and the authors.

Here, the hurdles are gone:

- There is an environment / open online learning community, where learning takes place through interaction with others;
- The environment provides one-click-access to all knowledge sources needed, both material and human;
- There is no distinction between different types of resources;
- All combinations of same/different place/time communication are supported;
- Participation is obvious, unimpeded, simple, and does not need stimulation.

Route to the ultimate situation

To overcome the limits of present technology and theories, backcasting from the ultimate situation to develop with what is currently possible is a good way to begin. In time, better technology will enable more and research will show us what works, what doesn't, and why. But technology is not enough. Acceptance, cooperation and participation of learners is also necessary and this hinges on two factors, namely achieving motivation and overcoming/avoiding demotivation.

Lack of external motivation to help others is a major problem. Community members must be willing to help others, and altruism is not enough. To make an open online learning

community successful, membership must be attractive and rewarding. Recognition seekers are motivated when answers are rated so they can earn 'expert points' while others may be rewarded through personal/professional network development, getting in the 'inner circle' with the more advanced students, alumnae, or experts. To kick-start a learning community, past students can participate for rewards. By setting a good example, participation by others is stimulated.

The current situation of separating written and human resources, difficult/impeded communication limiting peer contributions, etc. is demotivating and drives learners away from the environment.

What follows are two steps on the route to the ultimate situation.

Forum XL

Online forums are often used for asynchronous communication. Current use and possibilities of forums have the problems sketched. We alleviate this by:

1. Extending forum software to immediately send questions to expert volunteers whose replies are sent to the questioner and added to the forum. If no expert reacts quickly, the questioner indicates an insufficient answer and the question is resent to other experts. This immediacy solves many of the sketched problems
2. Rewarding answerers with 'status' (e.g. kudos) and ratings to increase the motivation to answer questions

Looking over the shoulder

A typical alternative for asking questions is looking over a fellow-learner's shoulder, but this is not possible online. A first step is to record information from a limited study-group on answers to exercises/questions, reflections on the material, notes and summaries and making this available to the whole group.

This support will be provided for a number of OpenER courses in PDF format. Each document will have a parallel version containing the information from the limited group.

Comments and notes are created using the email based review mechanism standard in Adobe Acrobat 8 professional. Students who volunteer to provide comments are sent the PDFs for annotation. The comments sent by several contributors are combined in one PDF that others can open to see what others did.

Open Education and the Sussex Learning Network: a partnership perspective

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Abstract

This paper will offer insight into selected features of user experience within a partnership project between OpenLearn and the Sussex Learning Network (SLN), with particular attention given to the use of skills-based resources within a dedicated forum. The ways in which both teaching practitioners and learners find benefit in the exchange of resources, closed MSG and learning journal facilities will be considered, together with a discussion of the nature and value of a research emphasis upon situated practice and gains in consequent understanding.

Introduction

In May 2006 The Open University in the South-East began a two-year eLearning Project in partnership with the Sussex Learning Network. One of the first of the Lifelong Learning Networks to be established nationally, the SLN is committed to supporting learners into and through higher education. Working with local FE and HE institutions, employers and other regional stakeholders, the SLN has a focus on vocational pathways in seven curriculum areas.

eLearning Project

The eLearning project is being undertaken by a team of five members of The Open University in the South-East. The overarching aim of the project is to identify, develop and disseminate examples of productive elearning within the regional community. In working to achieve this aim the eLearning project has three broad objectives:

- to raise practitioner awareness of global initiatives and developments in elearning;
- to identify and 'map' examples of productive practice;
- to encourage development and dissemination through the use of case study and practitioner enquiry.

The eLearning Project team works directly with selected practitioners within the identified curriculum areas. However, the project also seeks to disseminate ideas and practice through such events as meetings with the Project Advisory Group and conferences. A feature of these events has been to offer regional practitioners an opportunity to interact with the OpenLearn team and their associated initiatives including LabSpace, Flash Meetings and Compendium.

SLN eLearning Project and OpenLearn

Following the lively interest which SLN practitioners have shown in OpenLearn a specific project has been established to identify skills-based resources with which both teaching practitioners and learners could interact within a dedicated SLN forum. Such a space would allow the exchange of resources, closed MSG and learning journal facilities. The ways in which this facility is used is the essential concern of this paper.

Understandings gained from situated experience

A problematic feature of the eLearning Project has been the encouragement of open interaction within a community of practice made up from geographically remote and, sometimes, pedagogically disparate members. An informed understanding of online practice is often dependent upon an understanding of underpinning values and beliefs. In this respect the eLearning project seeks to interact not only within the 'specified' curriculum areas but also to gain insight into how these are 'enacted' by practitioners and 'experienced' by learners. The expectation that understanding can be gained from data generated by participant observation of situated experience will be both discussed and illustrated. The ways in which such understanding can be used as a basis for further action and the development of online pedagogy will also be considered. Finally, attention will be given to the efficacy and value of an open forum from a specific partnership perspective.

How long will it take me? Assessing appropriate study times for open educational resources

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Abstract

There are many factors that can determine the amount of time a learner will spend studying educational materials. Some of these relate to the abilities and motivations of the learner, some to the form and nature of the educational materials, and yet others to the context in which the learner is engaging with those educational materials. This paper explains the way that study hours have been determined for open educational resources within OpenLearn from The Open University and reviews early evidence of how long self-learners are spending studying.

Introduction

The abilities and motivations of learners are much influenced by their previous educational experiences, often measured by their success in gaining educational qualifications, the value placed on learning by their families and social/cultural group, and the amount of time and space that can be afforded to learning within their work and home commitments. Further there is the distinction between formal learning where achievement is recognised through assessment practices and has value in the labour market and non-formal learning where self-assessment is a bigger feature and provides self-gratification but it is harder to demonstrate that 'success' to others, particularly employers. All these features can influence how much time an individual learner will take to achieve the given or self-set learning goals.

With educational materials, the presumed level of understanding involved in terms of the complexity and sophistication of the ideas presented and need for pre-requisite knowledge are mixed up with the form in which such material is presented to the learner, in particular the levels of interactivity and integration (Thorpe, 2005). To some degree, where there are stated learning outcomes, these provide another measure of knowing when learning has been achieved; where there are not learning outcomes then the task becomes more open ended. Even so, different media influence the style and amount of information that can be absorbed and then processed by the learner (Thorpe and Godwin, 2006).

Estimating study times for formal learning

In most formal study the estimates of how much study time is required is mainly determined by the teacher or institution working within an agreed timetable and schedule of activities for the course of study. Custom, practice and sector norms have largely determined a tariff for study times that guide the students (learners), although the students themselves may take more or less time than that expected to be able to successfully complete and pass the formal assessment. It can be argued that it is the course start

time, the final assessment work and the formal assessments in between those two points that are the key drivers of study time as many experienced students work back from the assessment schedule to determine how much time and effort is required to study any educational materials (I am leaving out the timetabled lectures, tutorials and laboratory work as being a fixed element of 'study time' within a course). Extensive research has been carried out on workload issues for Open University teachers and students (Anon, 2007; Lockwood, 1997).

Estimating study times for non formal learning

With open educational resources that are studied informally and do not represent all the materials from a formal course (with its attached timetable tariff), there are greater challenges to providing reasoned and reasonable guidance on study hours. In effect, the learners have to determine their own study times through doing it. While this is a valuable skill to develop it can be daunting to self-learners used to schedules being provided for them. Nevertheless, with self-study style open educational resources, there is a need to provide some up front guidance so that the learner can hopefully make appropriate choices in what to study and whether to keep studying.

Any Unit published on OpenLearn will have had an initial study time assigned to it by a member of the originating authoring team. That figure will have been estimated on the basis of its place in context within a course, making assumptions about the reading, study and subject knowledge abilities of the intended audience. There will also have been assumptions about the time needed to study the materials in the medium in which they were originally written (usually print).

In providing a study time estimate for Units when published out of context and in a different medium on OpenLearn we needed to make some different assumptions and give guidance that manages the expectations of the wider variety of learners who might engage with the Unit and who do not have any professional support structures to help them as do our students. Using known studies on reading speeds (Anon, 2007) we uplifted the study hours for every Unit by 25% if the material was transferred from text to on-screen reading and a further 10% to allow for the Unit being out of context from its parent course (latterly the facility to be able to print out a screen based Unit has meant that study can occur in either medium). Full details of the assumptions made are reported by Lane (2006).

Early evidence

The initial research questionnaires did not specifically cover study time as an issue (Godwin, pers comm). Reviewing the forum posts to date of committed users of OpenLearn Units found that they are generally spending longer than the stated hours: 'This is the first of these units that I have completed, and I am so pleased I have. It may have taken me twice as long as the 4 hours suggested, but I think that may have more to do with studying at 6 in the morning (not my best time) as it is the only time I have undisturbed' and 'have just finished this unit after rather more than 4 hours but really enjoyed working through it'. Future investigations will be aimed at achieving more in depth answers to the questions posed by this paper.

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