The Open University

OpenLearn

Research Report 2006 – 2008

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OpenLearn

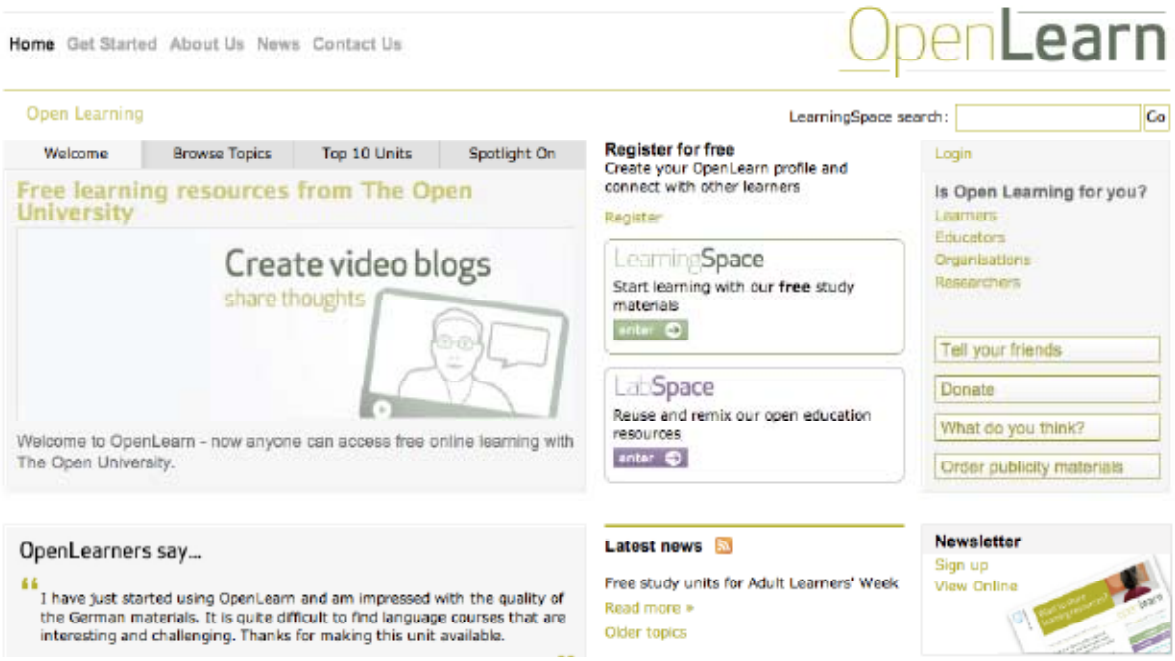
Introduction

OpenLearn set out as an experiment to explore how offering free content could be achieved. In the proposal to the William and Flora Hewlett Foundation it stated:

> *'The University has an extensive reservoir of high-quality learning materials available in a variety of formats. It proposes to explore how best to make some of these freely accessible in an international web-based open content environment and, in so doing, to advance open content delivery rnational research-based knowledge about modern pedagogies for higher education.'*

OpenLearn was established as an initiative to help us learn from producing and using open content. The OLCOS report (2007) used the term 'laboratories of open educational practice and resources' to describe the way that open content has led to experimentation in approaches to learning and OpenLearn has acted as such a laboratory carrying out a range of experiments linked to production, use and reuse of the materials on OpenLearn. Reporting those experiments encourages us to take a holistic view of the actions within OpenLearn to consider how technical, design, strategic and communication decisions have all led to approaches that have been tried and reflected upon. Alongside this approach of action research there have also been more specific research aims to understand how our production processes are working and the impact OpenLearn has on its user base of individuals, co-educators and institutions.

The result is a complex collection of multi-layered experiments and feedback, that sometimes only provides tentative results but those results are backed up with unique experience from trying to achieve the open provision of learning experience.



Content overview

This report takes the experience of OpenLearn over its two-years of operation to reflect on what it means to offer free resources and the issues that we have been able to explore and learn from. The structure of the document is:

Section 1 The OpenLearn initiative - an overview

Provides an overview of OpenLearn. This looks at the rationale and aims of OpenLearn and describes how it has met the targets: both those set out at the beginning of the project and those that emerged as OpenLearn progressed. This is followed by looking at the achievements of the project in terms of the benefits it has brought to The Open University as an institution and outlines the plans for sustaining OpenLearn into the future.

The remaining sections look at key findings and using research activity within OpenLearn as a way to link those findings to evidence and examples.

Section 2 OpenLearn research methods

Looks at how we set out to research OpenLearn and the way in which the challenges of working on such large scale and of conducting open research influenced the methods that we have used and approaches that we will consider in the future.

Section 3 Designing for Open Content

Considers the way in which OpenLearn has initiated different ways to work with and around open content by looking at the various collaborations and actions initiated by users in institutions, organisations or as individuals.

Section 4 Types of user of OpenLearn

Looks primarily at the user experience as learners. It draws on OpenLearn participants as researchers through studying their actions, carrying out surveys and asking them questions. Overall we can see patterns of use that help us understand how open content works and also how learners see themselves in different ways.

Section 5 OpenLearn modes of use

Then reviews the findings and the key issues that have emerged from this phase of work and reflects on the options we have for going forward into the future.

Definitions

OpenLearn

In 2005 the Open University proposed an initiative in collaboration with the William and Flora Hewlett Foundation to establish a way to provide free university level content. Launched in October 2006 it took the name OpenLearn. The name itself was suggested in a quick survey of students and in a later survey of the general population it was found that using a non-institutional name was considered to be more likely to be thought of as a real service. OpenLearn continues to be used as the label for The Open University's work in providing free resources.

The Open University

The Open University (abbreviated as OU) was established in 1969 to provide a way for those who had missed out on university education to study at part-time at degree level. All teaching is at a distance and from the start has combined media in the form of print, audio, television and radio broadcast, experimental kits and existing materials such as books. The OU was an early adopter of using computers to work with learners and provide them with computer-based learning materials. In this document 'we' can refer to The Open University, the OpenLearn team within it, or sometimes to the narrower research team.

Open Content v Open Educational Resources

OpenLearn was proposed originally under the title the 'Open Content Initiative' reflecting the idea that our aims were about what could be achieved by opening up OU content beyond providing the resources as packages to take-away. Over time the term Open Educational Resources and the abbreviation OER has become more established, especially across the community of those who work and research the way in which educational institutions are providing free access for learners. At the same time open content has tended to be seen as a larger term that goes beyond the educational field in which we work. Neither term is instantly understood by users, and one of our findings is that it is surprisingly tricky to communicate that we are really providing free resources. In this document we use open content and OER interchangeably, with OER implying both the plural Open Educational Resources, and the singular Open Educational Resource.

Learning environment

The main access to our materials is through a website that gives users both the content they can view and read on the page and tools that help them work with it. The terminology that we use for this is a 'learning environment' or 'virtual learning environment', VLE, to emphasise that it is on a computer. Such a system is also sometimes termed a 'learning management system', LMS, however that seems less appropriate for OER as we are not managing learning but offering a hybrid of a repository, structured assets, a community, course-based tools, and personal learning tools. The Moodle (http://moodle.org) open source learning environment was adopted as the main software platform for OpenLearn.

1 The OpenLearn initiative – an overview

Rationale and motivation

The Open University has a large catalogue of high quality learning materials in a variety of formats. Through OpenLearn some of those educational resources are made freely available in a web-based environment under the Attribution Non-commercial Share Alike Creative Commons Licence.

The OU set out to:

- add value to OER delivery by deploying leading edge learning management tools for learner support;
- encourage the creation of non-formal collaborative learning communities;
- enhance international research-based knowledge about modern pedagogies for higher education.

Drawing on its long experience of delivering supported open learning at scale to anyone, whatever their previous educational qualifications, the University expected to make a significant impact on both the quality and reach of OER delivery. In doing so, the OU hoped to meet the learning needs of a wide range of people with differing levels of educational achievement, skill and confidence.

By its very nature the OU is no stranger to the concept of making its material 'public' – published and available to students and the public to buy. From its inception it has had a powerful partnership with the BBC and for several decades its lectures were available to the public. Educational radio and TV programmes (free to view at first then free to record) have been openly available through terrestrial public service broadcasting in the UK ever since we began teaching in 1971. People have had the freedom to access and to copy this particular content but not the freedom to use it for educational or public performance purposes without a separate licence or prior permission.

OpenLearn was, therefore, an extension of the University's educational mission. The Open University is open to people, places, methods and ideas. It promotes educational opportunity and social justice by providing high quality education to all those who wish to realise their ambitions and fulfil their potential. Through academic research, pedagogic innovation and collaborative partnership it seeks to be a world leader in the design, content and delivery of supported open and distance learning (http://www.open.ac.uk/about/ou/p2.shtml)

Further, the University was committed to developing, with others, open content solutions that were effective and sustainable for both users and providers. This was a development activity and a research opportunity for which the University was well suited and was of considerable significance as we stood on the threshold of a new era of global educational delivery.

We also took the view that it was important to establish the impact of open content on our core business and our proposal was very much seen as a laboratory for exploring, understanding and testing how positive synergy can be achieved between open content and the core business of the University, albeit without exposing the institution to unnecessary risks.

The University's work in developing countries was another factor in its decision and OpenLearn was seen as a major support and contributor to the work of the *Open Door* (http://www.open.ac.uk/africa) and *TESSA* (http://www.open.ac.uk/tessa/) projects. However, there are limitations on the size and range of investments outside its principal functions which the University can undertake using its own resources and, in the absence of additional support, these are likely to have impacted detrimentally on the schedule and scale of open content delivery undertaken by the institution.

External funding was, therefore, essential to enabling the University to move faster, to capitalise on the momentum behind OER within the University, and to be a major player at a formative stage in the development of open content provision globally. In short, the support of The William and Flora Hewlett Foundation has enabled the University to act more quickly than would otherwise have been possible, and to greatly enhance the scale and impact of the work.

Throughout its history The Open University has given a great deal of attention to the meaning of 'open' and its consequences. Importantly (and most relevant to the OER movement) the institution has no barriers to entry, no entry requirements – only exit requirements. A person's background and previous advantage or disadvantage is entirely

irrelevant. This makes the journey from informal learning (the OER domain) to formal learning (where a student might well wish to have some validation of their learning) a seamless and encouraging one. As a basic principle we also believe that all education, not just adult learning, should acknowledge the primacy of the learner and their context in shaping their learning experiences.

More than that, our very objective was to change the situation where the physical nature of much current educational provision (tied to a particular place such as a classroom or lecture hall), bound up in a particular medium (such as text or audiovisual asset), and available only at pre-defined times (to suit employment norms) meant that the locus of control was much more with the providers of learning opportunities – the teachers – than the users – the learners. We mean to come to the learner and not require the learner to come to us. The giant leaps in technology have made this possible beyond our wildest dreams. The ubiquity of the Net and the sophistication of the modern 'telephone' have meant that learning can literally be delivered any time, any where, on any device. Open and distance learning has come of age – and gone global.

Even more significant than these hard or commercial technologies, has been the emergence of soft or social technologies in new forms of licensing for (largely) digital content. This 'some rights reserved open licensing' (for example the Creative Commons licences) placed on new and previously 'all rights reserved' copyrighted content enables the free copying, sharing, reuse and remixing of that content within pre-defined guidelines. This development has been central to the emergence of OER which go well beyond just the issue of open access, as in open access publishing of research publications, where authors can still try to control (or close down) all uses of the material not already defined and allowed in copyright law. The philosophy of open licensing and OER is to provide a route for learners to access content, with tools for them to work with it, and also a route for people to take and reuse the content, again with suitable tools. In principle this gives learners (and teachers) even more freedom as they can decide when to access it, whether they want to alter it, and how they learn from it.

Sustainability

The sustainability of The Open University's activities in Open Educational Resources depends mostly upon the overall policy and practice in relation to them within the institution and the identification of funding sources for that policy and practice; and partly on developments externally, in particular the acceptance of OER in wider policy and practice. Two years since the launch of OpenLearn we are still at the early stages of exploring the areas we outlined in our original bid:

- cost reduction;
- impact on core business;
- additional services;
- sharing of materials;
- additional external funding.

As outlined by Wiley (2006), the sustainability of OpenLearn (and related projects) will be achieved by making OER part of the normal fabric of the University's business, whether that is around teaching and learning, research and/or business and community engagement activities. As The Open University is already extensively involved in the development of educational resources and educational technology, in the research of educational practices, and in the promotion of wider educational opportunity, there is commitment within the University, both benefits and budgets permitting, to continue with OpenLearn in some form in to the foreseeable future and for it to be embedded within all its business operations within a reasonable timescale. This commitment can be seen in policies through the Open University's Strategic Objectives and Priorities for 2007–08 where OpenLearn is featured in five of the ten strategic objectives:

- Raise the profile and strengthen the brand of the University;
- Lead and innovate in pedagogy and educational;
- Explore the worldwide potential of open educational resources;
- Work in partnership; and, Generate more income from diverse sources.

The Open University's commitment in practice was already evident through the allocation of nearly £1 million of its own resources up to July 2008 in parallel to funding from The William and Flora Hewlett Foundation and the more recent £700,000 for a further 12 months.

Now that OER have become an established feature of The Open University and as the nature of their impact becomes clearer, the strategy for sustaining the development and use of OER within the organisation is being built on four strands:

1. to embed the development and use of OERs within all our existing activities;
2. to secure additional recurrent and project grant funding from a variety of sources to build upon this core work and to work with partners around the world;
3. to investigate new business models arising from differentiated or disaggregated services that support learning to very large numbers using digital technologies;
4. to explore the potential of combining the best in current technology developments (and in particular social networking) to a learning context to provide a flexible and innovative, technology-enabled framework for learning consistent with what John Seely Brown and colleagues are calling the next generation of educational resources – or Open Participatory Learning Infrastructure (OPLI) Initiative (Atkins, Seely Brown and Hammond, 2007).

Of course, the precise nature of sustainability depends on what is being sustained and for what purpose. There are two aspects to this issue. The first is the form of the site (or sites) itself and the value it offers to the OU and the world. The other issue is how much money will be required to run OpenLearn in the medium and long term? During the intensive start up and development phase the cost was in the region of $5.6 million per annum (mostly staff costs). In a less intensive development phase where functionality and content is added more slowly on a renewal basis then this cost has fallen considerably.

At present we have to transform and rework content in a format devised for and delivered through one set of media to a new format in another set of media. The parallel implementation of Moodle and a structured authoring schema for OpenLearn and taught course material development within the University will, in time, mean that materials will be designed for both purposes at the outset, thus significantly reducing unit costs for material for OpenLearn. Nevertheless, normal course production and redevelopment cycles as well as the sheer quantity of our educational materials means that it will take up to eight years to have all our educational materials developed in this new way, without significantly higher investment in such activity. Thus adding much greater levels of content beyond our current targets rather than relying on steady organic growth will still require dedicated funding. This applies both to current educational materials but especially to archived materials, many of which are not in a digital format.

As well as sustainability within the institution, we also recognise that the success of OER within The Open University is also dependent on a thriving and healthy OER movement where there is full and open sharing and collaboration between all Higher Education Institutions (Lane, 2008). Projects and programs that involve others will have further benefits to the University as it is able to reduce the cost of developing educational content which it employs in its courses and programs and also expand the curriculum areas it covers to those for which there is not significant demand, since currently large numbers of students are needed to help justify the investment in them and recoup the costs of delivering them. However there is still a lot to understand about a world in which much of the educational content is free at the point of use and it is other services that provide the main revenue stream. Even so the University is determined to develop its understanding and to make any new business models work.

Impact on The Open University

The OpenLearn initiative has touched upon almost all aspects of work and parts of The Open University within its first two years. While it will take much longer to fully understand its impact, the project team have collected and analysed a wide range of quantitative and qualitative evidence of achievements and behaviours, including solicited and unsolicited personal testimonies, to capture some emerging lessons. The achievements and lessons have been grouped under nine headings, but some lessons inevitably cross these boundaries due to the interdependencies of so many activities within the University. Some of the lessons also have more of an internal focus, others an external focus.

OpenLearn was for The Open University an experiment to help understand the impact of offering Open Educational Resources and so was not directly linked to particular benefits for the institution itself. However reviewing the actions of OpenLearn, the influence on student and other users, and the enabling effect of the initiative identified a range of benefits. While it is difficult to fully quantify these benefits in financial terms collectively they helped justify further investment from the university to support OpenLearn beyond its initial period.

Developing and extending the reputation of the University

OpenLearn has helped raise the OU's international standing both outside the higher education sector and with other higher education institutions.

From the first announcement of the grant, OpenLearn generated substantial coverage both within and outside the UK in print and online media, resulting in positive comment from politicians and recognition through various awards. It has raised awareness of The Open University in key countries, e.g. the US and especially members of the Open Courseware Consortium. More specifically OpenLearn:

- has been shortlisted for national/international awards, gaining the prestigious Platinum award at the IMS Global Learning Consortium Learning Impact Awards 2007, and a Commonwealth of Learning award for Excellence in Distance Education in 2008;
- has been the subject of many articles in the media;
- staff have been invited to give over 50 talks at national and international conferences;
- is recognised for its research into OER as evidenced by the successful OpenLearn 2007 conference;
- has enabled an increasing number of organisations to cite, download and reuse OU content;
- has been highly visible as a prominent user of shared approaches such as Creative Commons license, adopting open source software (Moodle) and effective search engine led and viral marketing/communication campaigns.

'True innovation in open access.'

Award judges for IMS Global Learning Consortium Learning Impact Awards 2007.

Deepening and broadening the community

OpenLearn highlighted that people may want a different relationship with the OU other than as a registered student. OpenLearn gives them the opportunity to be an OpenLearner.

In the 18 months that the site has been live a wide variety of people from around the world have accessed the site or the content taken from it. Some of these are past or current staff and students, some are people already thinking about becoming a student, but many others are people seeking information or informal educational opportunities. Yet others are people or groups from organisations that wish to make use of OpenLearn and seek some help from us. More specifically OpenLearn has:

- had over 3 million unique visitors;
- had over 75,000 registered users;
- been accessed by more people (69%) from outside the UK than within;
- provided new means of working with existing formal partnerships or collaborations;
- generated a number of new, less formal partnerships or collaborations using the site and/or content.

Data collated over a year showed 35% of visitors returned to the site and 50% of repeat visitors were 'new to the OU', meaning they had never signed in to the OU website with an Open University username. At least 4,400 people by April 2008 (growing to over 7,000 by November 2008) had registered on OU courses in the same online session that they were on the OpenLearn site. Engagement was key as a visitor who had used both the LearningSpace and LabSpace was five times as likely to register. There were twice as many registrations from continuing students as new students and the greatest number of registrations were in the subjects of Maths, Science and Technology.

OpenLearn was the fifth most popular reason that people ordered a prospectus over the year to April 2008, after course and pan-university advertising, word of mouth and online enquiries. Of these channels, OpenLearn was the most effective converter of enquiries to registrations.

Surveys of registered users show high levels of satisfaction with the site. Comments reflect users make links between the free OpenLearn content and working on paid for courses.

'OpenLearn has helped prepare myself and get me used to the idea of studying with the Open University. I have since enrolled as a result. I think OpenLearn is a fantastic resource.'

OpenLearn user

'I think it is an excellent idea…Boosted my confidence to go for an OU course'

OpenLearn user

'I am just about to take an exam (A210) and need all the help I can get.'

OU student

Contributing to the University's information, advice, guidance, outreach and widening participation activities

Being able to see or use OU materials helps people make choices as well as allowing informal study that may or may not lead to registering for a formal course. While OpenLearn has not been specifically designed as a recruitment and retention aid there are proven links between the website and recruitment.

OpenLearn has provided a useful tool for staff in regions and enquiry services to supplement and complement their existing activities. This has taken place without OpenLearn ever having been a formalised part of advice and guidance.

Examples of use by OU staff have included:

- introducing black and minority ethnic people in Bradford to online study to build up confidence to begin formal courses;
- providing DVDs of the content for loading on to computers in prisons for off-line prisoner education;
- developing thinking skills for prospective students in North West England;
- about 50% of enquiry services staff referring students and prospective students to OpenLearn for further information;
- OpenLearn materials have been used as the basis for some regional workforce development projects.

Two of the nation regions (Scotland and Wales) have worked with OpenLearn to develop open educational resources which will meet their local agendas.

'I have found OpenLearn particularly useful when it comes to advising students not to start at level 3!!! They are able to work through or at least look at examples of course materials at different levels and make informed choices about levels of study.'

Regional support staff member

'My experience of OpenLearn is that it adds a new dimension to enquirers and students who want to get a real feel for a course before registration… It allows them to gauge and confirm an appropriate level of study.'

Regional support staff member

'We have set up a series of "taste" events and awareness sessions in community centres where we are using Open Learn as a conduit into and catalyst for the Open University. We show the materials to groups of students (and individuals) for them to be able to see how electronic engagement works, what our materials look like and what is expected of them. … it is also an academically sound approach as our potential learners (and their families) can make informed decisions about their learning journeys.'

Assistant Director, Regional Collaboration & Widening Participation

The Open University in Yorkshire

Lessons and benefits gained from exposing and describing the OU's content through OpenLearn

Good quality free content appears to be the attractor around which other business opportunities may depend.

Content chosen for publishing on OpenLearn came from the full breadth and depth of the OU's taught programmes but with an emphasis on Level 1 and skills led material. The content grouped not according to the OU taught programme it came but under topic headings based on those used to support our television broadcast programmes on Open2.net. The target was to publish in the order of 4% of the OU's current and past catalogue of course materials.

The OpenLearn curriculum at the end of April 2008 has the following characteristics:

- 38% of current courses have a unit published;
- 12% of the 5,400 hours of current content is derived from student support materials or from special project material;
- 33 past courses make up the 8,100 hours of archived materials in the LabSpace;
- most of the materials are available in six different formats, all derived from the XML schema, and users are taking content away in ever greater amounts, e.g. well over 1,000 downloads of study units in Moodle back-up format in February and March 2008;
- the RSS feeds of metadata and content and the use of user tagging is enabling information about the content, as well as the content itself, to be widely distributed around the Internet. OpenLearn had 54,504 pages indexed in Google and 4,812 links to OpenLearn from other websites, increasing the OU web presence by 100%. There were 228,000 mentions of 'OpenLearn' reported by Google.

'We've used OpenLearn in a number of ways in the Arts Faculty. It was originally thought that we would use OpenLearn materials as tasters for courses that we were presenting and that has probably worked well. But we've been finding that OpenLearn has been gaining a life of its own. … It's an extremely exciting development that has breathed new life into what we do.'

Professor of Music, OU Faculty of Arts.

'[OpenLearn gives] Opportunity to explore all the issues around open content and more flexible business models.'

Head of Strategic & Service Development, The Open University Library

The benefits of testing and experimenting with new technologies

OpenLearn provided a less operationally critical/risky space to carry out experiments and work with open source communities.

OpenLearn began at a time when decisions had already been made on the use of new e-Production technologies and the development of a new learning environment based on Open Source Software (Moodle). OpenLearn has proved to be a significant test bed for the implementation of these technologies and for looking at other web-based tools and technologies, some of which have been developed within The Open University. We have shown that many of these technologies can be used at scale and have gained experience in understanding the dynamics of Open Source Software and various web applications. Having open content in different formats has also enabled some individuals in the OU to experiment with an even greater range of web applications of relevance to the implementing future learning scenarios.

In particular OpenLearn has:

- developed an online variant of the XML-based structured authoring schema and shown how content can be successfully tagged by outside agencies, and how content from all parts of the OU can be accommodated within the schema and displayed in one visual design solution (the two schemas have now been merged);
- been a pioneer in the use of an e-Production approach to workflow and storage;
- helped promote the use of Compendium as a knowledge mapping tool that has been downloaded and used by many people and has also been modified to act as the web-based visual interface for AV and text rich materials previously delivered on DVD, and modified as a learning design tool for use by course teams;
- encouraged small scale experimentation by others in the OU.

OpenLearn provided a base to experiment in the use of new technologies in education without affecting our operational commitments to our paying customers. By adopting a Web 2.0 philosophy of release early and release often OpenLearn was able to keep changing and adapting to perceived and actual user requirements. We have also gained from the open collaboration with the Moodle community and other OER providers producing web technologies and applications. Similarly others have experimented off the back of our work.

'OpenLearn has helped expose the extent of our Moodle investment to the world and showed we are leaders in open source development. This gives credibility to our commitment to fair use of our resources and our social mission. It immediately provides the trust on which long-standing profitable business relationships can thrive. … Partnerships involving shared platforms or development work on platforms have as much scope for income generation as the more traditional partnership models on which international business is currently based.'

Managing Director, OU WorldWide

Creating and nurturing strategic partnerships

There are increasing numbers of organisations who would like to be seen as working with the OU. OpenLearn offers a mechanism to start those collaborations.

OpenLearn has proved a valuable addition to the relationships the OU has with existing regional, national and international partners. In addition it is prompting new styles of partnership with other organisations wanting to develop or use OER and is changing our relationships with major holders of third party material so central to our operations. We are also at the forefront in the work of existing and new consortia involved with OER.

OpenLearn provides a way to encourage joint activity with smaller organisations where previously we may have not worked with them or only done so where there were external funds to cover the work. Even with larger organisations there is often no simple way to appraise the approaches and enter into formal arrangements. OpenLearn, with its free content and technologies, enables informal partnerships without formal commitments, through, for instance the collaboration zone, and provides a unique external facing space to trial and analyse new partnership work. This provides the potential for different 'grades' of involvement with the OU that could be set out and communicated against strategic priorities.

'The benefits of OpenLearn are increasingly being recognised in a range of ways across regions… part of a package of new approaches developed in partnership with other organisations.'

Regional Director, The Open University in the South West

'In terms of the work with partners, they've found it extremely useful. They've found it a way into higher education… So initially I would say all the partners have been really, really supportive, and I think it's opened the doors for the University to say we've got another major project coming on, what about getting some partners to engage, and I think if it's something to do with OpenLearn they'll be more than happy to help us.'

Strategic Partnerships Office, Strategy Unit

Exploring, examining and improving organisational structures and processes

Major changes in systems and processes require substantive investment of staff and money. Those changes can be tested out in OpenLearn in ways that are less critical to existing operations and where the changes can more readily be flagged as experimental or developmental to users.

The initiative has been based upon creating a multifunctional team with staff attached to their relevant home unit but working part time or full time on OpenLearn. While there have been some clashes of culture and working styles the project has benefitted from the close working, enabling demanding schedules to be met and the operation of a more open Web 2.0 philosophy to many developments. Most significantly the project has been a demanding testing ground for social media marketing, Moodle developments, technologies developed in at The Open University and the potential of the XML-based structured authoring schema. OpenLearn has been instrumental in developing the online version of the schema to go with the previous print-based version (now merged into one schema) and in using it to provide multiple output formats including the very new IMS Common Cartridge format.

Enhancing and building upon research strengths

Working in an open world encourages new forms of research. OpenLearn has supported ideas about agile research (rapid, intensive yet rigorous inquiries to answer specific questions) and large scale participatory research (the availability of willing, widely distributed research participants who can help collect and analyse data). The greater visibility of such work also encourages collaborative research activity.

Technology Enhanced Learning and Pedagogy and Human Centred Computing are both strong research themes at the OU. OpenLearn is contributing to both of these through the work of Institute of Educational Technology (IET) and Knowledge Media Institute (KMi) staff associated with the project, enabling some developments such as the Cohere idea sharing software (http://cohere.open.ac.uk) that may not have happened without this investment and which in turn may generate further research funding. By the end of April 2008 the research outcomes have included:

- seven refereed journal articles and 22 refereed conference presentations;
- 13 book chapters;
- over 60 research publications in total;
- a popular research conference with over 100 participants leading to a special issue of the *Journal of Interactive Media in Education*;
- support for pre-existing funded projects within the LabSpace;
- joint work with International Visiting Fellows;
- over £1m of funded research projects drawing upon the existence of OpenLearn (see below).

OpenLearn research outputs are available online on the OU Knowledge Network at http://kn.open.ac.uk/workspace.cfm?wpid=6478

The free availability of open content and web technologies removes some barriers to undertaking certain research and development. There has also been great value in 'rapid' writing and publishing in many forms and making these writings as open as possible, especially as there is much interest in OER and their implications.

2 OpenLearn research methods

OpenLearn provides a challenging environment for research with areas of interest across policy, technology, usability and pedagogical issues. OpenLearn is an open, functioning and constantly available environment reaching out to millions of users but requiring only low levels of commitment and contact. In our research we followed a principle common to The Open University to make 'distance a virtue' and bring together results using a mixed approach.

Research activities included action research, direct and remote studies, trials and experiment as well as more conventional approaches such as surveys and interviews. The key to drawing together findings was to be reflective and to study the operation of OpenLearn as a whole. This holistic view has been termed an integrative approach and seeks to apply multiple methods to authentic contexts. While an integrative approach can make it more difficult to isolate and describe particular effects it has the advantage of allowing issues to emerge and results to influence work while it is in progress.

Carrying out research on a large open access resource requires a mix of approaches.

Action research

One criticism of academic research is that the impacts of such research have little effect on practice. The process of academic research can be very slow with the major outputs often consisting of writings in journals for an academic audience. Research is often conducted from 'afar' that is, it is separate from the object of research. While separation will increase independence, complete objectivity is often not realistic in that research and researchers are embedded within research paradigms, personal social-cultural influences, and the influence of those who shape the research questions. The principles of action research call for a research process that involves change within that which is researched (Greenwood et al., 2006, Somekh, 2006). In a sense it is more of an experimental 'trial and error' process in that it is iterative, ongoing and affects change in practice. It can therefore be seen as a process of reflection and practice, often referred to as praxis. In order to affect action research it is necessary:

- to involve more of the organisation than simply the dedicated researchers;
- to integrate the results of the research into decision making at managerial levels.

Dangers exist however when moving towards a culture of 'self-development' where Action Research is seen as an efficiency tool as opposed to its more idealised aims of democratisation, development and empowerment of workers (Greenwood et al., 2006). There are also the dangers when research is taken out of the hands of research savvy practitioners to research novices. Hence there may be many models of action research adopted according to one's perspective. Another key issue of action research is the 'social-technical' view which sees the successful development of any organisation being an integration of the right social and developmental environment with the use of appropriate tools. For example, the use of tools for doing research and for enhancing interpersonal communication within the research community and others in the organisation is part of praxis resulting from the research itself.

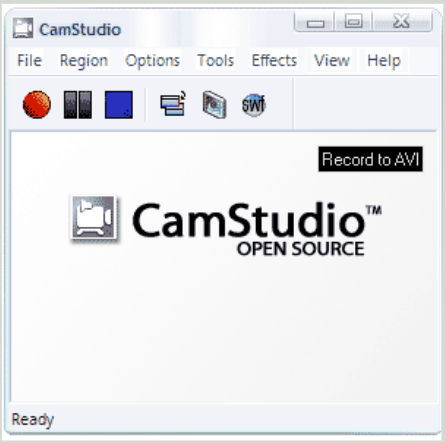
> *'The self of the researcher can best be understood as intermeshed with others through webs of interpersonal and professional relationships that co-construct the researcher's identity'*
>
> *(Somekh, 2006 p.7)*

Action research can provide us with a framework of research at the level of OpenLearn as an organisation but also as a framework of reflection and practice within the smaller OpenLearn Research Team. Action Research provides a way of developing ourselves as individuals and as a team allowing an exploration of ways of working and knowing. In this sense action research is about both personal and professional development.

Example: Gathering evidence at a distance

Remote monitoring can allow a clearer insight into the experience of the learner. This can be achieved in a number of ways. One example was developed with a volunteer who has been examining how to change and modify unit content within the LabSpace. A process that includes downloading pre-existing content, modifying and/or adding to it, uploading it back into the LabSpace as a new version. The research process began with communication using email and FlashMeeting where a fairly open ended task was set up. This involved taking one of the units from the LabSpace and making adjustments to the unit and adding to it, i.e. 're-versioning' the unit.

Jane, the volunteer, was given a series of options for recording her activity including the use of a video camera, digital camera with video capability or using CamStudio an open source facility that records screen activity and audio. After trying all three methods she decided to use CamStudio. This allows screen activity to be recorded but also allows the user to make a simultaneous voice over commentary. Jane made three recordings showing the process of downloading and uploading the materials and the difficulties that she encountered.



The recordings provided a useful insight into the problems of uploading and downloading content. These technical difficulties were reinforced from some data based on email questionnaires that had been given to a wider sample of users, some of whom had attempted to try to modify or upload material. Although Jane represented a potential content producer, as opposed to learner, it demonstrated the successful application of a remote monitoring technique, drawing on her own technical expertise in that she could handle the installation and running of CamStudio. After the exercise she was further interviewed about her experience using FlashMeeting. There is a sense that the greatest benefits of this research were in terms of feedback to the team to help in the development of OpenLearn (as a form of action research) rather than in exploring theoretical and academic issues. Furthermore it helps toward developing ways and thinking about issues of monitoring remote experience and encourages a user to become a participant researcher.

Activity theory as a way of modelling macro behaviour

OpenLearn represents one of the largest educational interventions on the Internet and as such the opportunity exists to understand how this operates and develops at a macro level. Activity theory was applied to help us interpret and communicate results. Activity theory focuses on action as it is mediated by tools within a socio-cultural context (Cole and Engeström, 1993). It was used as an analytical framework in this instance because of its educational applications including learning in organisations.

The foundation for activity theory comes from the Vygotskian view that all action is mediated by tools whether these be external or internal, concrete or psychological (Vygotsky, 1978). This has been developed into concepts such as 'person plus' and cognition as a distributed activity located within a social group and the tools that they use (Perkins, 1993). Leont'ev, a prodigy of Vygotsky, explored the way in which this could be applied through emphasising the activity as the main unit of analysis (Kaptelinin and Nardi, 2006). Engeström extended the framework and the subject-tools-object model to take into account aspects of the context within which such action was taken (Cole and Engeström 1993). He represented the inter-relationships between these contextual elements within a triangular structure each node representing some aspect of interaction. The additional contextual nodes that he added were 'rules', 'community' and 'division of labour' (Cole and Engeström, 1993, Kaptelinin and Nardi 2006). This framework was adopted as a practical tool of analysis since it could be applied to view OpenLearn from any number of different perspectives. These different perspectives could then be contrasted, reflected upon, or pushed against each other to force the identification of characteristics within each perspective and various 'contradictions' that existed between such perspectives. While activity theory can be applied at various levels for OpenLearn it was found that the particular power was in helping bring out these contradictions and to then communicate them to others (Godwin et al., 2008).

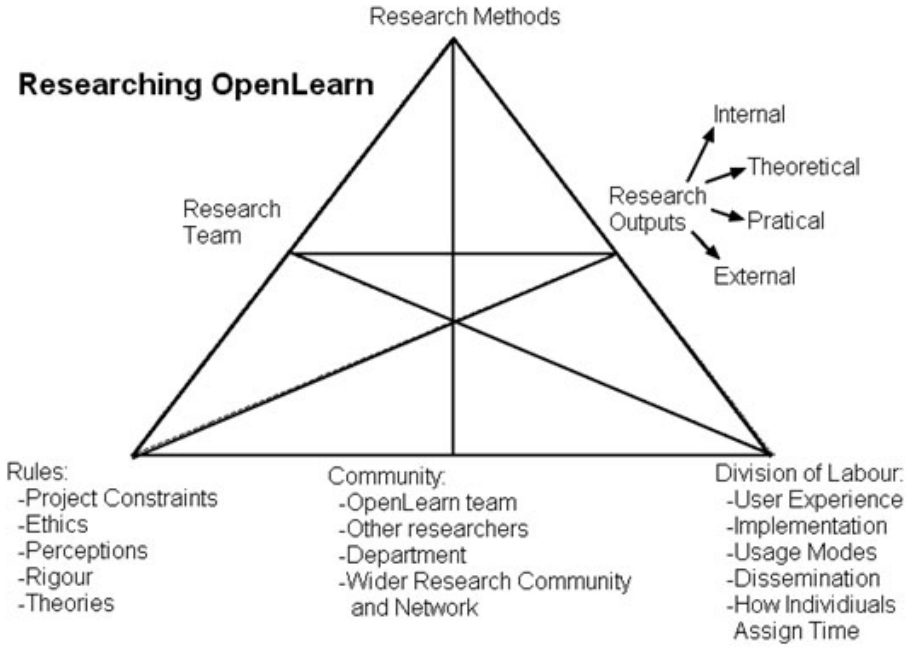
Applying activity theory and action research

It is clear that action research and activity theory can be used effectively together. As Somekh (2006) says when talking about action research,

'…activity theory is particularly helpful because it gives priority to collaborative decision making on the basis of sharing knowledge about identified 'contradictions'.

(Somekh, 2006 p. 22)

The socio-technical aspects of action theory can be related to aspects of tool mediation and the development of community. Activity theory can be used to identify contradictions and these can be used to implement change. Such change might create new contradictions but through the iterative process of action research improvements can be made. A multi-perspective approach can be used to inform those working within OpenLearn to affect change with activity theory helping to identify and communicate issues and action research linking them with the actions needed in OpenLearn.



Using activity theory to represent the research perspective within OpenLearn

Activity theory can also be used to represent the research process where the *subject* is represented by the research team, the *tools* by the methodologies used and the *object* by the research outputs that can be described as internal and external.

Researching such a complex and large educational initiative provides many opportunities and areas for potential study and often these are driven by the project aims. These aims can be envisaged as being part of the rules in which the research is located and represent rules implicit in project design. Other rules are external to the project and are part of the guidelines for general social research. These deal with issues such as research ethics which can sometimes create tensions with the need for fast feedback and 'interesting stories'. A contradiction arises between academic rigour and the need for quick feedback. *Rules* may also be related to perceptions of individuals within the team and relate to individual and group theoretical perceptions and opinions on the nature of good educational practice.

An action research approach sees the researcher's role in concrete problem solving, as opposed to remote observation, and the importance of any theory is seen in its ability to affect change (Greenwood and Levin, 1998). If high standards of rigour delay or are preventing useful feedback and change a contradiction occurs. This contradiction highlights a general problem of the slowness of academic research to reach and inform its intended audience. An awareness and analysis of the contradiction may lead to solutions that allow research findings to be disseminated internally in order to quickly feedback into the implementation and adaptation processes. This may mean adopting slightly different rules and approaches depending on the context and need.

One of the aims of OpenLearn is to target those that are not normally reached or have access to higher education resources. This illustrates another contradiction for research. For example, early research suggests that the people who may be making most use of OpenLearn belong to similar groups to the Open University's primary demographic and that the 'hard to reach groups' may not be accessing OpenLearn in a significant way. This however could be a reflection of the research process whereby those that ticked the 'research willing' box and subsequently volunteered for research are more likely to fit a certain type of demographic than those that prefer to remain uncontacted. This limits our data so that we cannot determine the complete user profiles for OpenLearn, which may in practice be much more diverse. This gives a challenge to the research process.

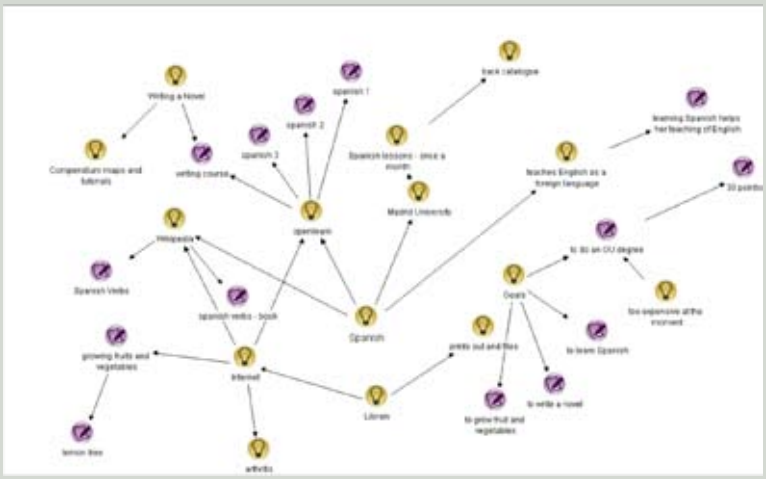
Tools for mapping and talking about research

The context of OpenLearn and its tools for sense-making also encouraged us to look at the role of tools in action research and activity theory. The development of various tools for thinking, analysing and describing therefore is part of our research process. With such an array of available media there are difficulties in identifying the most suitable way or ways for research discussion and dissemination. The question of how to find effective means of working with the research community to discuss and disseminate results can be seen as a typical area for the application of action research and involves experimenting with the different tools and the construction of different types of space. Various tools can be applied, e.g. blogs, wikis, and the facilities of the LabSpace. A research zone was developed using the LabSpace forums to create discussion around research issues, linking to questionnaires, and using the knowledge mapping and conferencing tools that were developed to support sensemaking for open learning were also applied to help the process of open research. In addition individual and collective blogs can also reveal insights into the research and development of OpenLearn and open content as a whole.

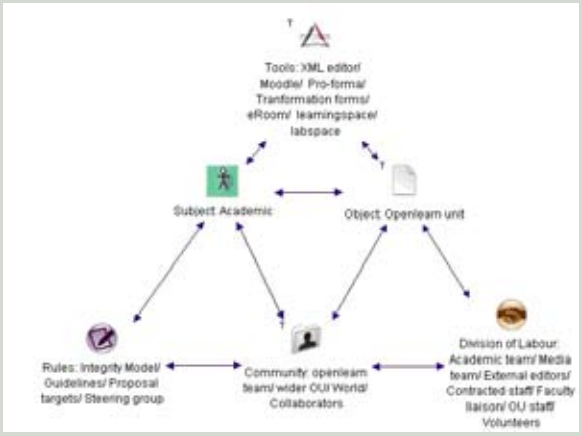
Example: Compendium knowledge mapping to understand learner narratives

Compendium is an example of a software tool available within OpenLearn that can allow the development of concept maps, integrative research diagrams and help to structurally organise and develop courses. As a tool within OpenLearn it is still undergoing development. Any type of mapping allows the user to present in a way that combines text and graphics in a visual dynamic that can represent various structures, concepts and their relationships. They thus exist as a tool allowing users to reach beyond the limits of the mind in terms of its cognitive load. Although Compendium has some limits compared with pen and paper it has the affordances in that it is editable, re-mouldable, non-linear, allows multidimensionality, nesting and layering, allows links to other technical resources such as web pages, documents, images, etc. It can also be shared dynamically between teams and individuals. Such a tool can allow us to model research complexity and represent discussion around theoretical issues. Compendium has been applied in several ways to support research: it has been used to construct activity theory representations, share learning designs, gather issues for research, and represent the results of interviews and surveys.

For example a map can be constructed from interview data with 'Anne' a learner whose experience is discussed further below, and Compendium can also be used to produce an activity map that represents the pressures from the perspective of academics working on the team to prepare the initial batch of content for OpenLearn.



Representing a learner's interview narrative using Compendium



Activity view of transforming a unit in the initial phase of OpenLearn

Studying our users

There is scope for gathering different levels of story and evidence. These may be based on partial data but can still lead to valuable ideas and advice.

From the beginning in OpenLearn we realised we would have to take a three-level approach to studying our users seeing them as enthusiasts, registered and visitors.

The **enthusiasts** are those who are prepared to tell us what they do. For this group it is important that we can provide a route to report back data to enable us to capture stories and investigate new ways to use OpenLearn. When the OpenLearn site was developed it had an implicit model of the user that was drawn from the background of The Open University and influenced by the adoption of a learning environment that was focused on the concept of the student. Some of the enthusiastic users are learners who fit that model and see the free provision of learning opportunities as the motivation. We can observe these users as they interact on the OpenLearn site recording their thoughts in learning journal entries and building knowledge maps. At the same time OpenLearn gives permission to users to work with the content in any way they wish. This was made explicit in the provision of a separate 'LabSpace' with extra facilities and the invitation to users to make changes to the content. What we did not expect was how innovations in use would take place away from our own site and be appropriated.

Two examples of enthusiasts in action are the taking of our content for reuse in distributed CDRoms/DVDs to provide local personalised learning environments in remote parts of the world (Esslemont, 2007) and the transfer of OpenLearn content through RSS feeds into other environments (Hirst, 2007). These users provide innovations that we did not plan for or had envisaged having a different purpose. The model of users as innovators is considered by von Hippel (2005) as an extension of his view of 'lead users' that are going beyond the mass of users. The enthusiasts provide a small number of such lead users and we have been able to draw on their experience and change our own work to benefit others. What is interesting to us is whether we have a greater mass of lead users amongst those who have not made contact with us.

Monitoring has included automated notification of blog entries that refer to 'openlearn', encouraging contact and being aware of potential connections, however it remains difficult to make an assessment of the level of participation and identify interesting activities. More direct appeals to draw innovators to the site have been more successful and this has now encouraged a group of educators to edit materials on the site. This gives us new material of benefit to all of our users, for example a translation into Catalan of an existing unit on genetics, but also provides us with a connection with users who are trying out new ideas. This suggests a model based on offering authentic actions on site that can also provide us with data.

For those users who are **registered** on OpenLearn we can identify both their activity on the site, through logs in the Moodle system, and we also request that they indicate to us if they can be approached for research purposes. In practice just over half of those who register on the site give this permission. This group of learners (in total over 30,000 by the end of the two-year period) provided the main source of respondents to questionnaires as surveys could be appropriately targeted and email used to request participation from different cohorts. However, registered users of OpenLearn are less than 3% of the overall users as measured by software tracing machine access.

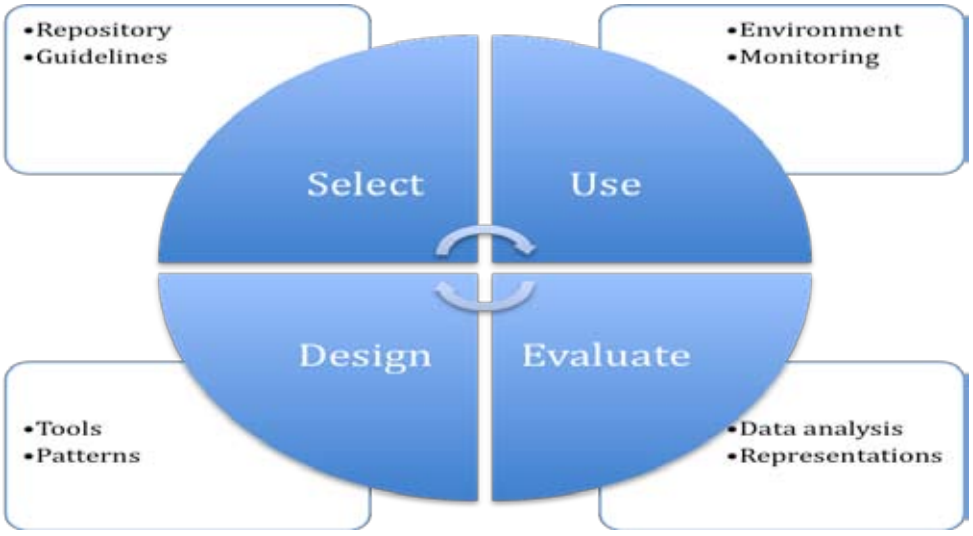
The visitor category includes the 97% of our users for whom we have no direct measure of their activity and we are only left with the tracks left from IP addresses, search engine hits and visit cookies. These are crude tools but should not be ignored in analysing use (Harley and Henke, 2007). In the case of OpenLearn, custom software was created to covert the log data stored by the Moodle learning environment into traced visits depending on machine address, the software then enables overall trends to be calculated and also visits to be examined. In addition analytics software was used to gather information about overall use of the site. Two packages were implemented, the first from Site Intelligence was used to enable OpenLearn data to feed into existing analysis of behaviour across Open University sites. In particular this provides a way to see when a user registers for a course on the separate OU student registration site. So even without a user registering on OpenLearn we were able to make the vital connection between a user whose first visit to the Open University was via OpenLearn, and hence OpenLearn could claim some role in recruiting that student. The second analytics software implemented was Google Analytics, a free service provided by Google. This offered the advantage that it provides a comprehensive and easy to use dashboard to quickly provide breakdowns of user access based on factors such as visitor location, time on site and content accessed.

Capturing and sharing research stories

Research methods that bring out the relationship between the selection, use, design and evaluation of OER will help create a shared understanding of how OER work.

In OpenLearn we initially focused efforts on understanding our own processes, the behaviour of end users and the motivation and ideas of collaborators. We also realised that our research and observation only provides a snapshot of activity and the lessons we found did not necessarily get back to our users or those interested in the process. An alternative approach is to capture the stories and lessons from the OER practitioners and those involved in the action research process of designing, building and using OER. This would also recognise the enthusiasm and willingness to contribute of participants in open content. In the current work we have taken limited steps to bring these aspects together however we have therefore started to develop ways to model an idealised process to share and communicate results from using OER to connect with evaluation and design.

The OER effectiveness cycle shown below presents one way to consider how to connect aspects of working with OER. In this idealised model one moves from design or selection of OER, to implementation, to deployment, and through evaluation in order to generate data that informs design iteration. This may happen rapidly or slowly, with anything from one to hundreds of learners, generating informal or formal data with diverse forms of evidence. For each stage of the cycle there are possible tools and resources that need to be exposed to the community seeking to understand and change the use of OER. Each stage can also generate specific outputs such as a design representation or a new evaluation instrument, which can be put back in for others to use. For example a user might query an existing OER repository, such as OpenLearn, as a means of selecting OER for use. Another user might develop a survey instrument for evaluating the use of, say, science-focused OER which they then make available to the community, and yet another user may then apply that instrument to evaluate their use of Science OER.



The OER effectiveness cycle showing the components that we want to capture and share

All too often the feedback loop that links from evaluation, to data collection, to cumulative design improvement is broken, and those links could be forged and nurtured by bringing together research evidence with the resources themselves. This cycle is focused on OER as the objects of interest, with other tools facilitating its transition at different stages. In the current generation of repositories (represented by OpenLearn, the work of the OpenCourseWare Consortium and collections such as OER Commons) we are starting to provide the raw materials in the form of OER but the designs tend to be hidden and it is rare to share the examples of use or the methods that we can apply to evaluate or understand them.

The OER effectiveness cycle is also reflexive in that it can apply to the objects involved in research as much as to the OER themselves. Any of the design representations or other artefacts generated, or used to analyse, OER designs can themselves become 'social objects', that is, artefacts shared, deployed, evaluated and improved on by the community. The hope is that there will be sub-communities focused on designing better OER Learning Design Patterns, better Social Learning tools, better Evaluation Tools, better Dataset Analysis Tools, and so forth. Our work on OpenLearn has started to provide some of these tools and experiences and we hope that we will be able to develop approaches that share these with a wider community.

Research 2.0

Based on the experience of OpenLearn we have developed a view of researching informal learning that shares some characteristics with the approaches of Web2.0. We believe some of this approach to 'Research 2.0' could be transferable to other similar projects and the mobile environment. We would advise that projects:

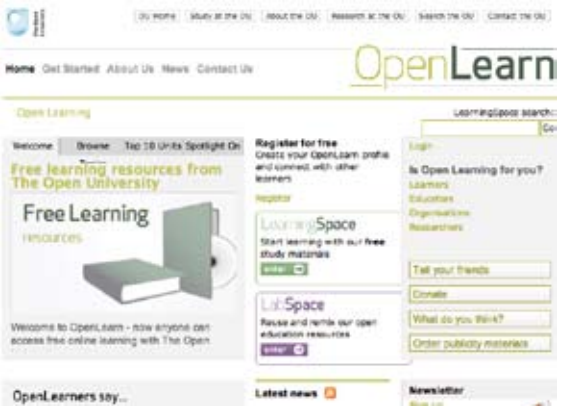
1. realise that it is not possible to control all routes to access;
2. encourage all involved to be part of the experiment;
3. look in the data to find patterns that can apply more widely;
4. build activities that are valuable to the user but provide you with data;
5. be prepared for the user that arrives anywhere in the system;
6. start to make reasonable conclusions though you wish you had more.

This advice is in itself tentative but can help to shape the interests of those involved in the production, use and reuse of open content and encourage informal learning – even when we are not sure quite how it is defined for those who are learning in this way.

3 Designing for Open Content

It can be hard to communicate the message that 'yes it really is free'.

Site design

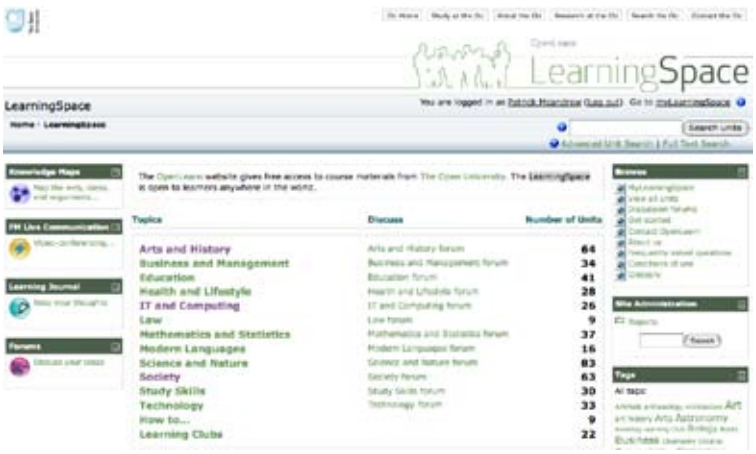


OpenLearn created two interlinked websites (*LearningSpace* and *LabSpace*) under an integrated access point (www.open.ac.uk/openlearn) that presented the background to the site, let people know what we were up to, gathered interesting case studies and offered additional help to users. The split into two sites adopted a model that users would either come to look at the content and learn from it, or engage more fully taking advantage of permission to take content and reuse it. Both these requirements needed to be met and involved different risks and priorities. In this section we present the structure that was implemented, look at the impact on users and the project and reflect on alternative structures.

The LearningSpace: a supported OER site for learners

The *LearningSpace* website (http://openlearn.open.ac.uk) provided the home for a wide selection of pedagogically structured OER derived from OU materials. Integral to this site are an appropriate selection of *open source support tools* based on Moodle (www.moodle.org) that help users (principally learners) manage their chosen content (self support) and suitably interact with other users (peer support).

Each unit is able to be used by itself, but they are also collected into different topic areas and in some cases there are connections between units based on where they were taken from the original curriculum. Users are free to organise their own pathways to suit their own needs whether as an individual learner or as a teacher of a group of learners. Content is available under a Creative Commons licence, free to access, and with no barriers to use. Registration is only required to gain full access to the communication tools.



The LearningSpace was built in a customised version of Moodle and contained 900 hours of OER at launch in October 2006 rising to in excess of 5400 hours by April 2008.

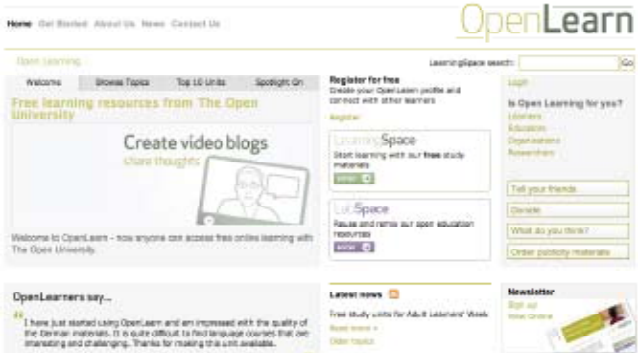
Whereas the LearningSpace was to contain fixed units of read-only OER that could be strung together as appropriate (in the same way students select modules within our taught modular programs), we also wished to foster the dis-aggregation and re-aggregation of these materials and material from other sources to create new, or new versions, of units.

The LabSpace: a supported open sense-making site for educators

The LabSpace (http://labspace.open.ac.uk/) is where a greater variety of units would be placed and from which users (in this case mainly the creators of courses) could construct a wider range of learning experiences. The LabSpace was to contain a larger amount of material and would be in a less structured form (both the 5400 hours worth of units in the Learning Space plus a further 8100 hours of other archive OU material by April 2008), and it would provide a site to which others will be able to contribute.

As with LearningSpace LabSpace was built in Moodle but initially offered a greater range of support tools for learning management and community building to provide a more dynamic way for the resources to be used and developed and used by a more committed and technically-aware set of users. Once tools were tested by that community they could be made available to the wider group of users through the LearningSpace.

OpenLearn home page: communicating with users



Immediately after launching the LearningSpace and LabSpace sites to users it was realised that there was a further need to communicate with our users. We wanted to explain what we were doing, highlight activities that were linked to the project, develop case studies and give extra help to guide the different sorts of users that we expected. It was therefore decided to develop a main home page built outside Moodle. This allowed the page to be redesigned more rapidly and be changed without risking impact on the service to the users or interfering with the design of the LearningSpace around content and the LabSpace around reuse and experimentation.

Sense-making and social tools

Online learning is often undertaken by an individual in their home or place of work in physical isolation from others studying the same material. Social software that allows these individuals to come together to communicate with other learners can play a vital role towards the achievement of the desired learning outcomes.

OpenLearn provides free and simple video-conferencing called FM-Live. Recorded FlashMeetings can be booked and carried out from within a web browser and requires no download. Virtual lectures, web-casts of physical lectures and workshops can be recorded, broadcast and published as reusable learning objects.

MSG is OpenLearn's instant messaging tool. By showing learners that others are online and within easy and immediate contact, MSG encourages peer-to-peer support, especially useful in an environment without formal tutor support. Learners are able to find each other geographically using an interactive map. They are only one click away from chatting with learners around the world.

Compendium knowledge-mapping software allows learners to create visual maps of the connections between ideas, issues, arguments, documents and websites. Learners can map concepts, debates and meetings, or design new learning pathways simply by dragging and dropping web resources. These maps can then be shared with the rest of the community for collective benefit.

As well as these custom tools OpenLearn offers its users the facilities already provided by Moodle. In particular forums were created on both LabSpace and LearningSpace for each unit and for each topic area, and every registered user could create their own learning journal based on the blogging facility available in Moodle.

We also gained from adopting Moodle in providing a stable platform, transferable content and having an international development community to work with. For example we were able to adopt a hierarchical browsing approach developed at a Canadian university, while contributing back as open source software OpenLearn developments such as a system for tagging content.

Reflections and user experience

This decision to develop the two sites was made for several reasons:

- to present the LearningSpace for stability and the LabSpace for experimentation;
- the LearningSpace offers tools that are known to work in the context of learning;
- in the LabSpace release new tools early when they might not meet all requirements;
- the LabSpace offered a home for content that was treated in a lighter way;
- to establish looser branding for the LabSpace to encourage collaboration and contributions;
- to support as soon as possible reuse concepts through download, edit and upload;
- to examine routes for content from user contributed to peer reviewed and refined.

The LearningSpace has shown itself to be an important vehicle to attract and keep clients, whether they are existing students re-registering, new students registering from the UK and from other countries, or existing and new organisational customers wanting other services. The LearningSpace can grow with new content feeding through from further courses, particularly as production methods inside the university converge on those used in OpenLearn.

The LabSpace offers a test bed for all users, including Open University staff, in developing skills and competencies in using new technologies to develop courses and for creating and trialling new curriculum materials. Such opportunities can be restricted within existing programs due to limited resources; or may not be readily seen as having a large enough market to justify the high investment required for a substantive course or program. The LabSpace also offers a place to house experimental or contributed content. The fewer users on the LabSpace limits the chance of mass activities; however those users show greater commitment, typically spending longer on the site and viewing more pages.

User reactions

User reactions to the OpenLearn sites were examined across a series of usability studies, using a range of techniques including eye-tracking, expert evaluation and remote and face-to-face user studies. In addition to detailed usability and accessibility aspects they found that:

- the idea of free educational material is good;
- it is difficult to overcome expectations about the OU and that education can't be free;
- users would visit it again.

Even though changes were made to the top level site to emphasise the message that OpenLearn did offer material for free, this feedback remained in subsequent studies. While the concept of free OER is attractive it is not always easy to communicate. Different labels for OER or open content may help understanding. Alternatives proposed have echoed the terminology emerging for software to incorporate free/libre however such terminology can be unwieldy.

An important factor emerging from studies was that many users came to OpenLearn via search results and that the content on the LearningSpace made it a greater attractor for search algorithms than the main home page. The ratio of visits to the main page: LearningSpace: LabSpace was approximately 2:12:1. This means that most users are bypassing any careful explanations on the home page, and even more never get to see extra features on the LabSpace.

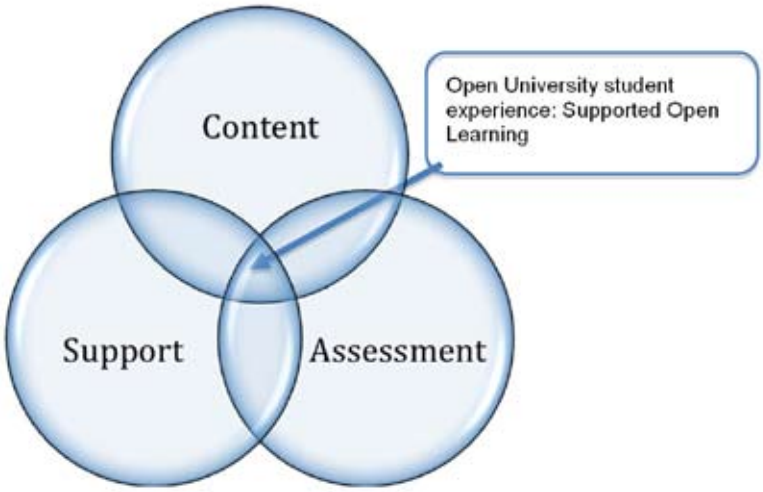
The division of OpenLearn into two main sites enabled OpenLearn to develop more rapidly and to address its two main constituents. However the bulk of users only experience the LearningSpace. The software architecture in place duplicates functionality across the two spaces which also leads to maintenance issues to ensure that user identities are preserved. An alternative approach would be to adopt a single underlying structure for content together with clear badging and guidance for ways to use the site. While a unified approach would help transition content from one status to another by avoiding the need for the content to cross from the LabSpace to the LearningSpace, the main advantage is to avoid dividing the user base by making users choose between the two sites.

The review of the separate sites model indicates that OpenLearn gained from separation of purpose and use of Moodle in the development phase but should now consider merging the spaces to provide a better service for contributed content and gain from mass use of all material on the site.

Content design

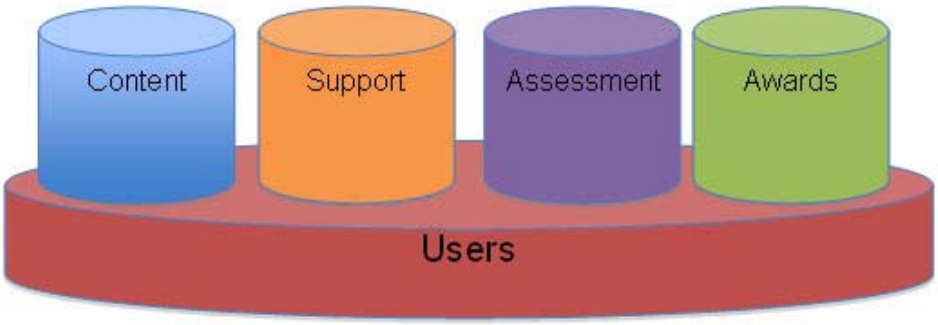
Users can adjust themselves to using OER materials sourced from existing courses.

In the OpenLearn environment there are no barriers to access which means that the controls that are available in the original material need to be relaxed. However the starting point is typically content that has been designed to meet the needs for a particular group of learners. The approach to distance learning developed at the Open University has been termed Supported Open Learning (SOL). In SOL the components of material-based learning, tutor support and assessment are combined to offer an integrated experience that has been proven to be very effective and ensured that students value learning with The Open University as a highly satisfactory learning experience. (The Open University has been at or near the top of the National Student Survey since it was instituted in 2005.)



Integration of components in supported open learning

The OpenLearn approach seeks to separate out the 'content' element to build a disaggregated model for learning where these elements are no longer directly linked. However implicit in the design of the SOL material are knowledge about the curriculum, group size, assessment and additional support. Under a truly open model direct control over these factors is lost. This need not mean that the learners are not able to work from material that retains some of the original context. The approach for the majority of OpenLearn material was to keep much of the source material while carrying out reasonable adjustments to decontextualise the content and to avoid cross-references and terminology that no longer make sense in the new open context. Keeping the new content similar to the original seeks to retain the value in quality assured material at the risk that the learner may meet challenges that would be more difficult to carry out in the new context. For example some tasks could be more appropriate to work in a cohort, or with feedback from a tutor. While leaving such activities in the OpenLearn material will mean that the user has to make some adaptation to match the challenge to the new environment it offers greater potential than if it was removed completely.



Disaggregated view of elements for learning

Models

Despite some terminological differences (Hylén, 2006) open educational resources are largely digital assets (music, images, words, animations) put together into a logical structure by a course developer who has attached an open license to it. In other words, the content is openly available (it can readily be found or discovered), is openly accessible (it is in a form which others can take it away) and openly re-usable (the user can easily modify it and is allowed under the license to do certain things with it without having to ask the creator's permission first).

The source materials

We, like others before us, were faced with a significant tension at the beginning between making existing educational materials freely available on the web on the one hand and believing that materials on the web should (ideally in many peoples' views) utilise the capabilities of the web and how people use it. Thus it was (and still is) believed there should be fewer words, more graphics and much more dynamism or interactivity in a highly structured, more resource-based style of pedagogy when authoring courses for the web. So one aspect of OpenLearn was to explore, review and possibly to redefine what it means to author open and distance learning materials.

At one extreme the OU has industrialised the development of open and distance learning courses, producing integrated sets of resources, each with a strong pedagogic structure, but heavily reliant on text. Early forays into online courses retained a strong (often linear) narrative structure and still used lots of text, albeit web-based. Large numbers of students can simultaneously study the same course supported in groups by tutors that act as guides to this rich set of resources. At the other extreme most Virtual Learning Environments (VLEs), including Moodle, are based on a classroom model, with fewer structured resources, many more activities and facilitated by a single tutor, who is often the sole course author. The number of learners is limited by the capacity of the single tutor. Somewhere in between (hopefully) lies a model that retains the collective development of well structured resources in a more flexible format but that is also scalable.

We believed that the task of transforming existing educational material would vary in part depending on the nature of the source material. An empirical review of some early source material at a workshop within the OU suggested that it fell into three broad categories based upon high level teaching approaches and medium of instruction:

- material that was authored for the web and so is largely structured for online study but might have a different technical treatment and design look to that which would be possible in Moodle;
- more heavily structured multiple media materials designed for resource-based learning that needed reconfiguring for web delivery within Moodle;
- large, discursive, narrative style printed pedagogic texts which would require more effort to re-purpose.

The specification for study units

The educational materials taken from OU courses to be included on OpenLearn are termed (study) units. Early in 2006 we set out some ideal specifications for the major structural features of OERs for the LearningSpace at three levels: the units themselves, groups of units and features within an individual unit. In designing the content it was decided that clear specifications for the units and their features were needed. The grouping of units was not directly addressed in the design of content, but tools were provided to allow users to tag and collect their own groups of units.

We decided that the major characteristics of a unit overall should:

- be 3–15 hours of study time in size, ranging from roughly an evening's worth of study to a week's worth of study part time;
- be labelled as being at a particular HE level (1,2,3 or M) as known within the UK Quality Assurance Agency's Framework for Higher Education Qualifications and articulated in an OU levels framework document;
- be self contained with no references within them to other units and limited references to external URLs;
- probably be subdivided into smaller sections or bits of 3 hours length;
- normally have no more than one learning outcome or competency per 3 hour bit;
- involve a mix of media but with more activities than is traditional in a pedagogic text;
- comprise both material study time and learner thinking time.

The features of a unit can incorporate a variety of media resources can be incorporated provided they conform to the following:

- on screen text and static graphics (pictures, diagrams) representing a web page, normally not more than two screens to read at any one time to avoid excessive scrolling;
- web pages should be joined by hot links in the simplest manner possible and should have no more than two levels of hierarchy;
- text as pdfs for reading on screen or printing off with each document should usually be no more than 5 sides of A4 for each;
- total text components, whether web pages or as pdfs should not exceed 1000 words per study hour;
- animations, audio clips and video clips can be used but kept to a minimum unless already available . They must also be pertinent to the topic and not seen as infill;
- similarly, software applications can be included if already available and suitable for open content use on the web;
- in a few cases it should be possible to base a unit around a readily available printed document or book(let) which users can get for free or at very low cost.

In addition to these resources there can be other features within a unit:

- self assessment tasks should be included that cover each learning outcome. These may either be an interactive quiz or a reflective activity in which the learner writes down note to refer back to if they ever have to undertake formal assessment on that topic;
- an acknowledgements section that details the authors and possible sources of material included, including copyright status;
- a discussion space (a forum) where different learners can post comments including evaluations of the unit.

These formed an early 'ideal' specification before material had been published. Our initial experiences of transforming material raised several further issues which we address in the following sections.

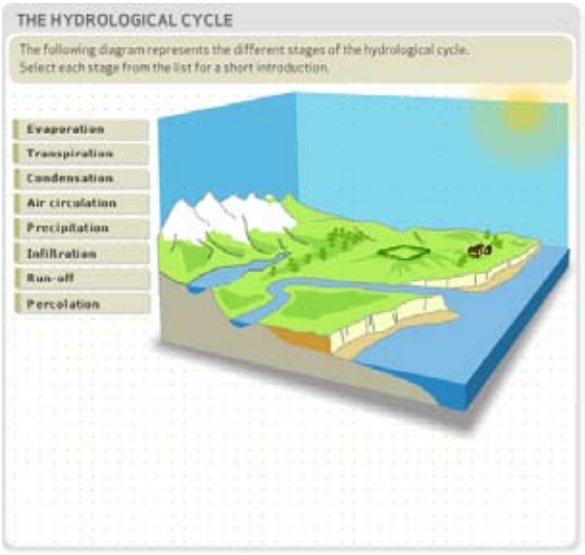
Models for transformation

After establishing an ideal specification, workshops took place with both potential internal (academic staff from faculties) and external transformers (people who had expressed an interest in reworking materials from seeing publicity about the project). We asked participants to look at samples of source material in paper format and reviewed these to see what type of transformation they thought was required to make them suitable for presentation in the LearningSpace. The discussions that followed highlighted a fundamental higher level issue to the detail provided in the 'ideal' specification: the balance between (1) keeping faith with the source material and retaining most of it albeit with some presentational changes and (2) with undertaking substantive reworking of the material to fit the currently assumed ideal characteristics of web-based learning materials – limited text and plenty of interactivity.

In practice the project focussed on two forms of operation with content, the integrity model and the non-integrity or remix model.

The integrity model

- The **integrity** model is one where all the material in the unit is recognisably very similar to the original material and as complete as possible with the ability to study it in the same order as the original. This involves translation of content from one medium of delivery and use to another within an existing structure and implied pedagogy. In some cases the user experience may be changed or enhanced, for example using the interactivity that is possible in a web-based environment. The integrity model does not simply mean the transfer of text files. There are some changes that apply acoss all units, for example 'click and reveal' of activity answers compared to having to look them up at the back of the book, and audio-visual clips integrated on the page. In other cases the current (print) medium allowed for some interactivity between learner and content (filling in missing word quizzes on the page) that was awkward to replicate online using the Moodle quiz functionality. Some changes apply only to particular units, for example static diagrams replaced with interactive animation of the diagrams. This requires investment of time to produced the necessary animations (typically in Macromedia Flash). Once produced the animations are available for further reuse, a good example is the interactive Water Cycle diagram produced to support the unit on potable water treatment which has also been re-used in other units.



The Hydrological Cycle interactive diagram from
T210_1 *Potable water treatment* at http://openlearn.open.ac.uk/T210_1

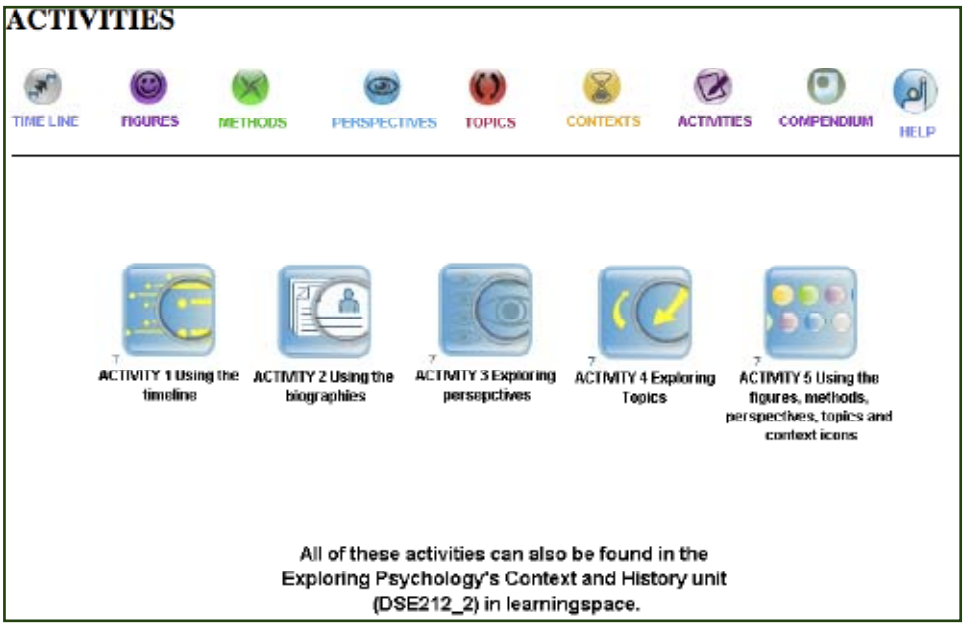
The commonest form of integrity unit took a vertical 'slice' or 'segment' of study out of the original course, that does not disturb the linear flow of the original material. In a small number of cases we did publish units that we sometimes referred to as 'tasters' (for example T206_1 *Why sustainable energy matters* at http://openlearn.open.ac.uk/course/T206_1 and Y156_1 *Understanding children – taster materials* at http://openlearn.open.ac.uk/Y156_1) that were more of a horizontal slice from the whole course with lots of very small vertical slices having been linked together by the course team to

create a new linear flow different to the original course. These 'tasters' could also be considered as an **essence** model where the source material would be cut back to the essential features, with text heavily edited into shorter blocks fitting a single page (or two), new activities being added to increase interactivity and other resources changed or added, e.g. images or short animations.

One further variant on the integrity model is where the 'unit' provides a simple guide and (additional) activities to complement some educational materials held on another OU or OU-related site e.g. www.Open2.net. This has been termed a **tour guide** model. The series of units about Finding information in 'a topic' (for example LIB_1 *Finding information in Arts and History* at http://openlearn.open.ac.uk/Lib_1 and LIB_2 *Finding information in Business and Management* at http://openlearn.open.ac.uk/Lib_2, and so on) follow this model.

The non-integrity (remix) model

In the **remix** model, the source material is used as a starting point or early draft of what needs to be taught but the unit is designed from the outset for the new web-based context. Remixing is expected to involve greater changes to the ordering/learning design of the assets within a unit, types of interactivity and the substance of the content, beyond changes to the medium and format. Possible changes can be made to pedagogy or learning design and the way content was to be covered, for example editing down, switching from text to animation, using sellf assessment such as Moodle quizzes, and links out to external resources.



There were sometimes fine lines between variants of the integrity model, such as the tour guide model, and possible variants in the remix model. The practical way to distinguish them was on the basis of the amount of new academic 'authoring' of content, especially text, being required pre-handover as opposed to editorial reworking of pre-existing text. The majority of units followed the integrity model so as to maintain the publication rates needed to meet our agreed targets.

One approach to remixing that emerged was the changing of the order and type of assets through the use of the Compendium knowledge mapping tool available on the site. This gave new life to material that had previously been available on CD-ROM. One example of remixing assets was the unit DSE212_2 *EPOCH Psychology history timeline* http://openlearn.open.ac.uk/DSE212_2 – where Compendium acts as an interface to a wealth of bibliographic style resources to be explored.

Reflections on terminology

Terminology can have a significant impact on how a process is viewed. From the outset the term 'remix' had been generally used to talk about the significant re-purposing of materials by any user, within or without the OU. This was because this was a term with greater currency in the open content and open educational resource fields (Wiley, 2006). However, in relating the process to usual OU processes it had become clear that it was the same as the process of 're-making' a taught course covering basically the same subject matter, that is it occupies the same space in the curriculum, but where new and updated material would be added to some of the original material as appropriate. Accordingly, for internal purposes we began referring to units that require substantive re-purposing as 'remake units', but externally still talk about the remixing of units. Does this matter? It certainly helps clarify matters internally but whether remix as a term is also off-putting to external users is not clear. It does highlight that discussions of this matter can be fraught with misconceptions or misunderstandings and the degree of transferability of our experiences to others.

The role of learning design

OER can help provide models for teaching as well as resources for learning.

The content itself is seen as the key commodity in OER based on the concept of offering for free material produced first for paying students. However the content inevitably brings in assumptions and it is difficult to be sure as an educator that it will fit into new contexts. In particular building on the integrity model there is potential concern that too much connection with previous assumptions will be made. For the individual learner these concerns do not seem to be borne out by the evidence. In particular:

1. There is evidence of learning: the trail of activity of users shows large scale use of content with approximately 100,000 unique visitors each month, approximately 11,000 people viewing whole units for printing or reading on screen, and learners reading ~15,000 forum entries each week there is evidence of engagement.
2. Users identify material as interactive even when it is text based: in survey responses content is overall viewed as interactive by the majority of users with praise for the participatory style of tasks and structure.
3. Options for further refinement and reuse: the content provided on OpenLearn can be changed. An example unit was reworked from linear style to be embedded in to a Flash structure. This required technical skill but drew on the existing pedagogic content. This kind of change has only occurred in a limited way but with the launch of low cost and free content presentation systems there is increasing scope for transferring content into new structures.
4. Interest in downloadable content has been high. In particular with print format but also as zipped collections of assets. Initially these options were not available, however research with end users identified that they were laboriously creating their own print and asset collections and production of these versions was automated from the XML stored on the site. In this case the print origin of material can be a benefit as attractive and coherent print versions can now be readily produced.
5. Much of the content is derived from OU material that was originally designed to meet accessibility conditions. Additional features added to content increase the risk that it might not comply with accessibility requirements.

While the content appeals to learners there is however evidence from elsewhere (Littlejohn, 2003) that educators are wary of using content without understanding it. The popularity of lesson plan sites for teachers and interest in pedagogic patterns indicates the value in describing teaching approaches as well as providing content. OpenLearn has the potential to make the structure of its content more explicit and also to use that structure to help in deciding the changes necessary from one context to another.

One approach that has been developed in parallel with OpenLearn (Conole and Weller, 2008) is to use the Compendium knowledge mapping software to represent the structure of course material. Two flows through the material can be constructed. The first corresponds to an original activity in OU course material, the second shows the altered activity on OpenLearn. The formal tutor role is no longer present and formal the formal assignment has become instead an option to make entries in the personal learning journal.

Example: Studying the arts and humanities

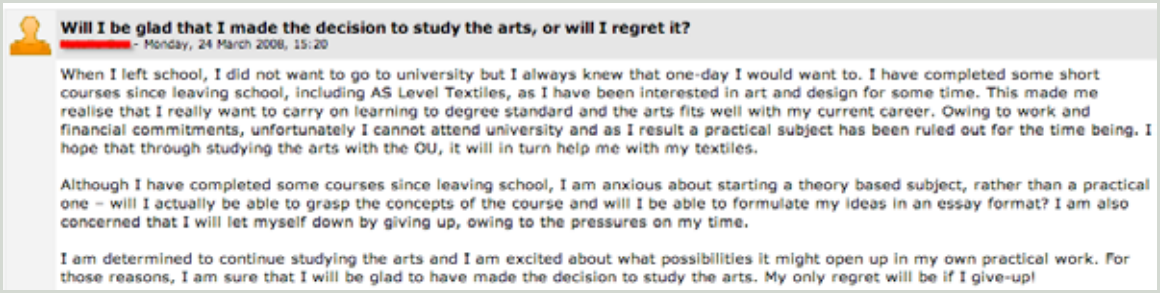
OpenLearn URL: http://openlearn.open.ac.uk/course/view.php?id=1472

In this unit learners are asked to reflect on their approaches to learning to address the outcomes:

- a clearer perspective on why you might like to study the arts and humanities;
- an awareness of the basic skills and techniques required for studying at a distance.

At the end of the section the learner is asked '… to write a paragraph of about 250 words on the reasons why you are taking up studying the arts, …'

The text at this point suggests making this a note in a notebook, however the section also ends with a call to post in the message forum or learning journal.



Will I be glad that I made the decision to study the arts, or will I regret it?

[redacted] - Monday, 24 March 2008, 15:20

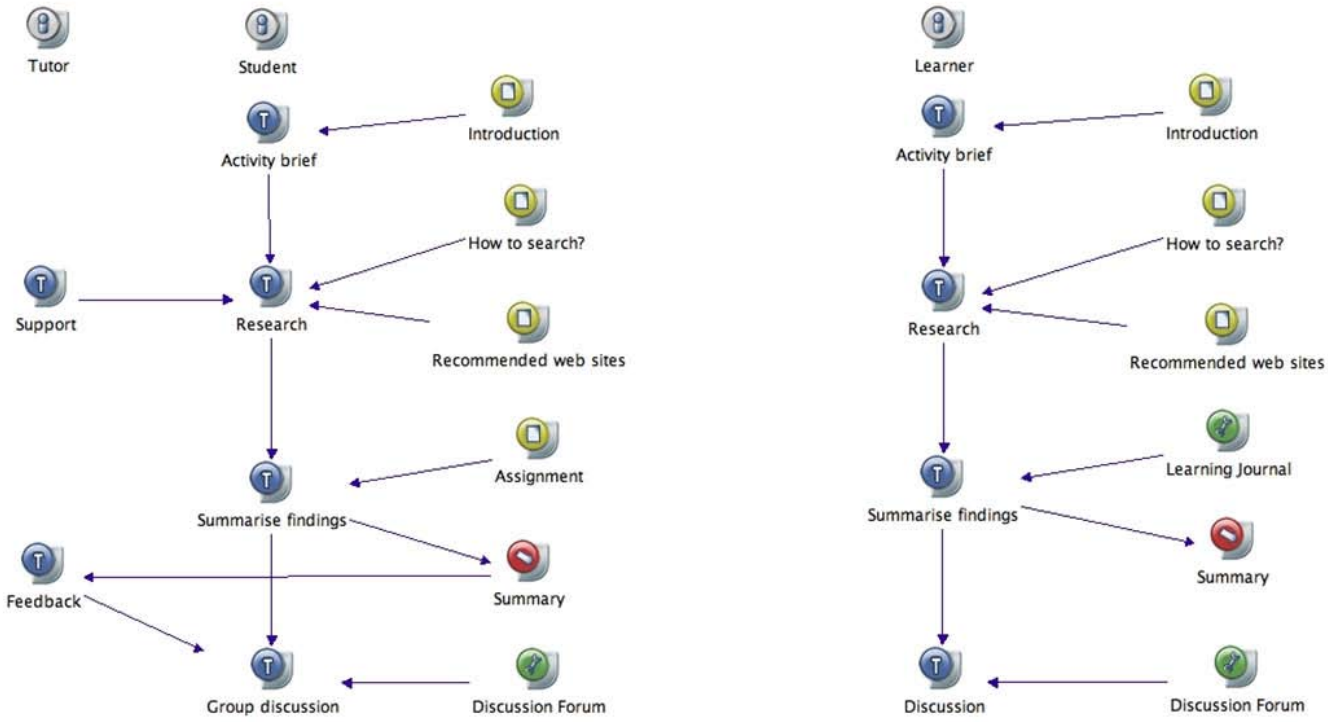
When I left school, I did not want to go to university but I always knew that one-day I would want to. I have completed some short courses since leaving school, including AS Level Textiles, as I have been interested in art and design for some time. This made me realise that I really want to carry on learning to degree standard and the arts fits well with my current career. Owing to work and financial commitments, unfortunately I cannot attend university and as I result a practical subject has been ruled out for the time being. I hope that through studying the arts with the OU, it will in turn help me with my textiles.

Although I have completed some courses since leaving school, I am anxious about starting a theory based subject, rather than a practical one – will I actually be able to grasp the concepts of the course and will I be able to formulate my ideas in an essay format? I am also concerned that I will let myself down by giving up, owing to the pressures on my time.

I am determined to continue studying the arts and I am excited about what possibilities it might open up in my own practical work. For those reasons, I am sure that I will be glad to have made the decision to study the arts. My only regret will be if I give-up!

Looking in the forum for this unit we see posts such as:

Learners see the challenge in the text and respond using appropriate tools available to them. Despite the lack of tutor marking learners respond to the requirements in the task and interact with the course material leaving evidence of engagement and learning.



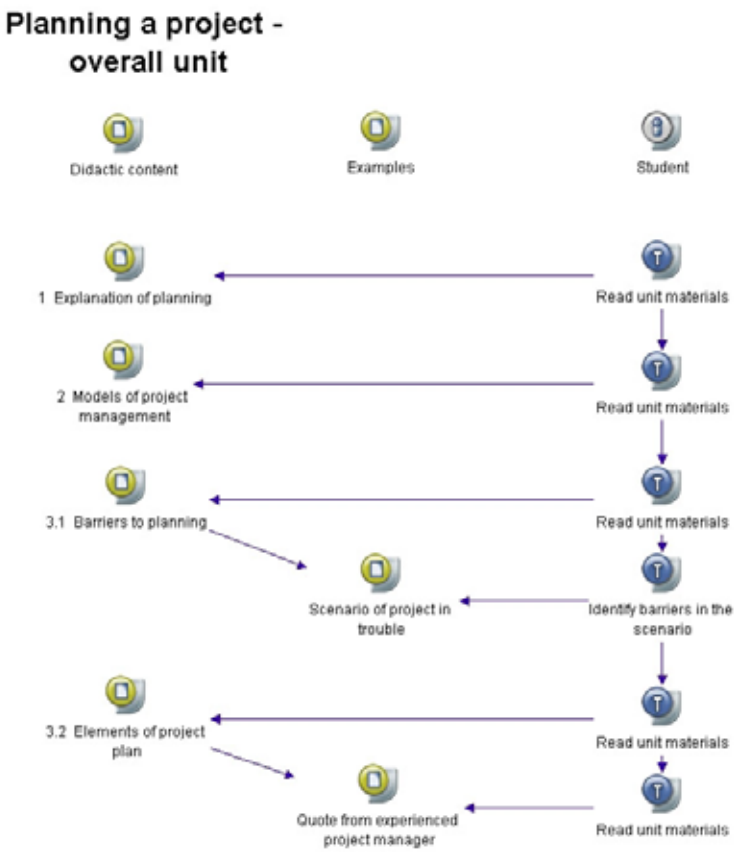
Adjusting the design of OU content to the OpenLearn context

In OpenLearn learning design approaches were used in workshops and to discuss designs amongst program staff but not made visible to end users until late in the project. The Cloudworks project had established a method for describing case studies of good practice applied to course material inside the OU. This method was then applied to a small sample (five units) of OpenLearn content chosen on the basis they:

- had a high user-rating (4–5 stars) – showing that at least one person thought they were good;
- included potentially interesting features of learning design – i.e. were not just textbook presentations;
- between them, represented a spread across subject areas.

The selected units were then analysed and a set of learning design maps produced, for example learning design can be used to express the overall design of a unit about 'planning a project' using a modified form of Compendium. These designs were shared alongside the original units on the LabSpace. Reflections on the process included:

- units can be described at different level of details but simpler maps more quickly communicate key features;
- important resources emerge once designs are considered in terms of learner activity – for example a graphic embedded on a page can be significant in itself;
- reading and self-study activities were highlighted more in OpenLearn units than had been the case in OU units.



Representing the learning design of an OpenLearn unit to explain its structure

Learning design as a focus for sharing has great potential to provide a way to get overviews of how online learning material works. The Compendium knowledge mapping tool has shown itself as very good for representing designs visually with the added advantage that it can link directly to material. Designs built around open content may be a good source for communicating and discussing approaches to learning, however the overhead of producing the designs meant that only a limited number were produced leaving the area still to be fully explored.

4 Types of user of OpenLearn

Users who come to learn from the site are of different types. Key stereotypes that can be observed include volunteer students, social learners and bounce visitors.

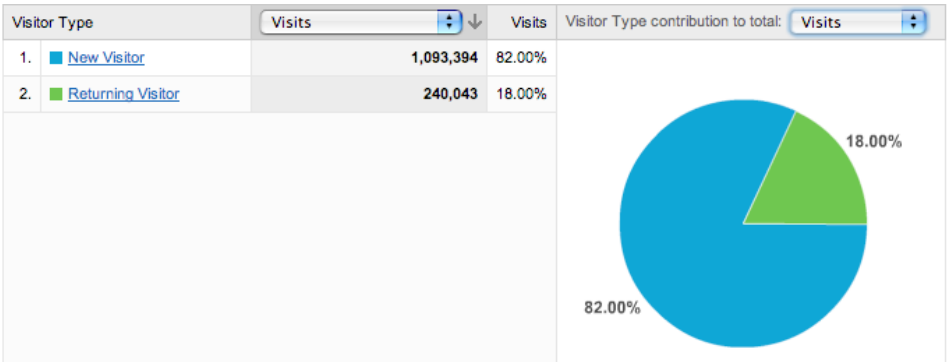
The OpenLearn site appeals to many different users and has attracted a large number of users. It is not surprising that the appeal of the site is diverse across those users and this raises a design challenge in how we can produce content for unknown users. The original design considered a division between learners and educators and also looked at the way in which we could support and work with other institutions. From our experience we can now reflect on the division in the way the mass of users come to the site. To do this we can draw on the pattern of access to the site reflected in analytics and logged data, responses to our questionnaire and direct information from users.

Analytics data

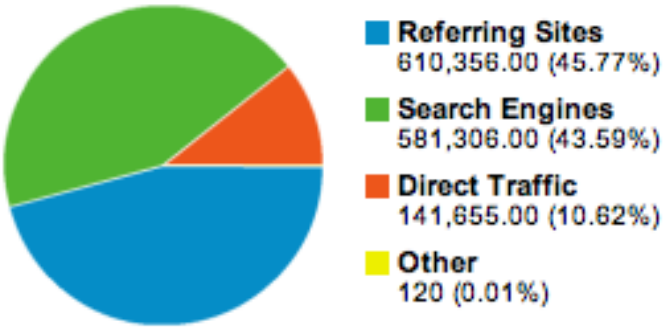
The OpenLearn site used automated collection of data through tracking of Moodle logs, cross-correlation of data with other Open University sites, and Google Analytics. Each of these gives partial data that can be used. To help understand user behaviour across all users, whether registered or not, we will look here at the Google Analytics data that was gathered from January 2008 with six months of data available to July 2008. This six months of data (15/1/2008–15/7/2008) is summarised below:

In six months there were just over 1 million unique visitors making over 1.3 million distinct visits. A visit is defined by

the analytics software as any interaction with the site that is at least 30 minutes since the previous visit. The data gathered means that while 82% of those people who visited the site in that six-month snapshot only visited once, 18%, representing more that 240,000 visitors, revisited. (Note earlier figures looked at access during the first year period and showed that 35% of visitor revisited, this discrepancy is partly due to the different way data is gathered and partly different samples.)



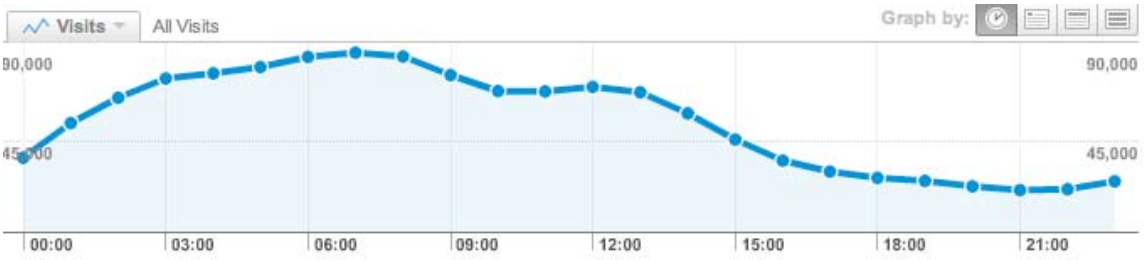
We get approximately the same number of visitors from referring sites as arrive from direct search (about 45% each) with the remaining 11% coming directly to the site by entering the URL. Nearly 6000 different sites have referred users for this period. More than half the referrals come from sites in the open.ac.uk domain, however it is notable that users from sites such as ocwconsortium.org or education-portal.com are likely to view more pages and spend longer on the site. Of those who arrive via search approximately 95% come from a Google search. More than 250,000 different combinations of search terms lead to visits while the top-20 search terms for this period are:



Rank	Keyword	Visits
1	openlearn	12579
2	open learn	9069
3	open university	7827
4	interpersonal skills	6931
5	spirulina	2203
6	operations management	2183
7	what is identity	2018
8	open learning	1982
9	social work values	1722
10	data flow diagram	1580
11	marketing communication	1569
12	eutrophication	1504
13	common law	1474
14	learning space	1451
15	marketing communications	1312

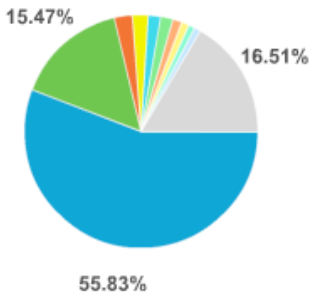
Notable in this set are some unusual word such as ‘spirulina’ and ‘eutrophication’. Eutrophication, for example, is a technical word relating to the pollution of water. The concept of eutrophications is covered by a unit on drinking water with objectives that help understand the impact rather than just provide information. This indicates how specialised content can reach a relatively large audience by being openly available.

The daily pattern of access (based on GMT-8hrs in this display) shows a pattern which peaks at 6 a.m. (2 p.m. UK) and has a trough that runs from 3 p.m. to 11 p.m.) (11 p.m. to 7 a.m.). With the peak/trough ratio of 4.5:1. This indicates that the majority of use occurs during the UK working day but that at any time of the day use could be expected to be at least 20% of the peak.



Access to the site has been truly global with domain of access coming from 225 different countries/territories including isolated visits from such places as the Vatican, Guinea-Bissau and the Marshall Islands. In this six-month period UK access is the largest sector at nearly 56% of visits, though from analysis over the whole two years of operation period UK access is approximately 30% of total visitors.

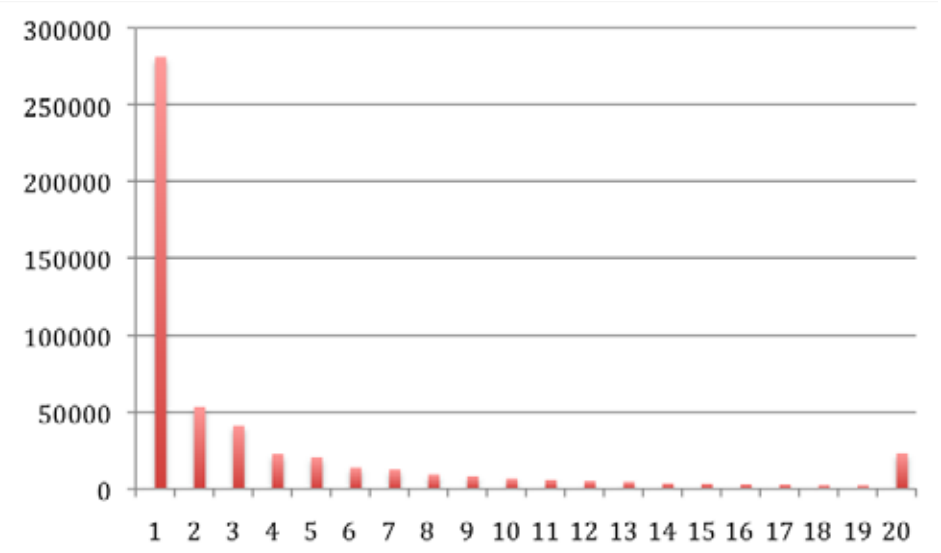
1.	United Kingdom	744,436	55.83%
2.	United States	206,346	15.47%
3.	Canada	33,038	2.48%
4.	Australia	29,315	2.20%
5.	Germany	23,038	1.73%
6.	India	22,802	1.71%
7.	Ireland	16,540	1.24%
8.	China	14,164	1.06%
9.	Spain	12,111	0.91%
10.	France	11,553	0.87%



The time that users spend on site is skewed towards very short time on site (note data now from April 15 – July 15 2008, to avoid an anomaly in the time data recorded for February - March):

Length of Visit	Visits	Percentage of all visitors
0-10 seconds	286,054	54.49%
11-30 seconds	18,746	3.57%
31-60 seconds	26,632	5.07%
61-180 seconds	60,207	11.47%
181-600 seconds	66,885	12.74%
601-1,800 seconds	47,935	9.13%
1,801+ seconds	18,529	3.53%

The short visits are also typically to only one page:

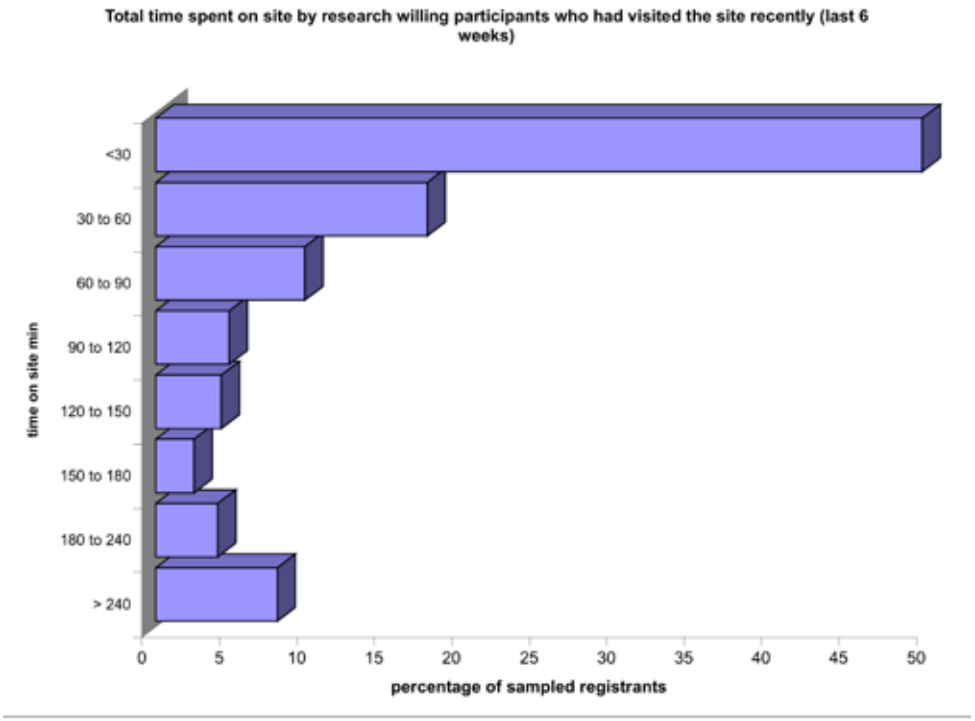


Thus half of visitors are ‘bounce visitors’ who only visit 1 page and then leave the site. However, there is also a clear group (4% of visitors in this three-month period) of those who engage with >20 pages on the site and who spend more than 30 minutes on the site. These high users were targeted for greater research through surveys and interviews.

Learner diversity

To explore users' experience of and potential use of OpenLearn an email was sent to 6196 registered users who had declared that they were willing to participate in the research. This email contained a link to an online questionnaire. Only users who had visited the site within the preceding six weeks of mailing were identified as potential participants for the survey (although many of these would have visited the site prior to this period). This was to ensure that they had a recent memory of their use and hence increase the validity of their reporting.

Two types of questionnaire were created based on the times registered users had spent on the OpenLearn site. The usage times were calculated by examining logs of OpenLearn page use for each individual registrant since the launch of OpenLearn. One group, low users, were defined as those who had spent 30 minutes or less as registered users on the site, and the other, high users, more than 30 minutes as registered users on the site. The distribution for a particular six-week period indicates approximately 50% of the active research willing users in that period can be considered low users. The questionnaire they received was shorter in length as low users may have had a more limited experience of OpenLearn and may be less likely to invest the time to fill in a longer questionnaire. It was also felt that they would have had insufficient experience to make valid judgments on some of the questions. High users were asked more detail about their experience in working with units. In other respects the questionnaires were as near identical as possible to allow a comparison of low and high users.



Pattern of use of OpenLearn – based on six-week sample of registered users

Four batches of survey requests were sent out over a six-month period. With each batch all potential users that fell within the six-week usage constraint were contacted. A reminder was sent after two weeks of the sending date if there had been no reply. No third reminder was sent to avoid overloading the recipients with unwanted email. In all 2011 questionnaires were completed which gave a return rate of 32.5%.

The questionnaire covered the users background, reasons for visiting the OpenLearn, attitude to the content, experience with tools and intentions for the future. One analysis focussed on the answers to questions on intended use of OpenLearn and ranking of suggested facilities (some of which were available on OpenLearn and some not). The aim of this analysis was to get an insight into users' needs and to explore the types of user that OpenLearn might attract.

The table below shows the average scores given to a question asking the students to rate, using a four point Likert scale (1 representing a low rating and 4 a high rating) a list of 10 features based on the question 'In terms of your own potential use of OpenLearn how important would you consider the following features?' The mean scores given were calculated for low and high users and the 10 features ranked in descending order according to their mean scores. It was clear that the mean scores and ranks for low and high users were very close and often identical. Indeed the first seven ranks are the same for both groups.

In interpreting these scales it must be borne in mind that although a mean score might be comparatively low it does not preclude a smaller sub-group who think the attribute as important. It is however revealing that:

- a large choice of content is considered the most important feature of OpenLearn and that interacting with other learners is low on this list;
- the second most highly scored option was 'to have ways to test and assess my learning'. This is a feature not commonly available within OpenLearn and perhaps points to the need for signposting, self-assessment and feedback. It may also point to the desire for more formal recognition of achievement;
- third on the list is the desire for interactive content – which is designated within the question using the relatively simple examples of quizzes and interactive diagrams. It is clear that content itself is perceived by users as an important feature. Media aspects come lower on the list but are above the middle scoring point of 2.5.

Q. In terms of your own potential use of OpenLearn how important would you consider the following features?				
	Low Users (mean score)	Rank (low)	High Users (mean score)	Rank (high)
	n = 1024		n = 987	
A large choice of content	3.5	1	3.6	1
To have ways to test and assess my learning	3.3	2	3.4	2
Interactive content e.g. quizzes etc	3.1	3	3.1	3
Question and answer sessions with experts	3.1	3	3.1	3
Images and graphics	3	5	3	5
Video Clips	2.9	6	2.9	6
News items	2.8	7	2.8	7
Audio and podcasts	2.7	8	2.7	8
Facilities to create personal space	2.2	10	2.3	9
To be able to interact with other learners	2.5	9	2.2	10

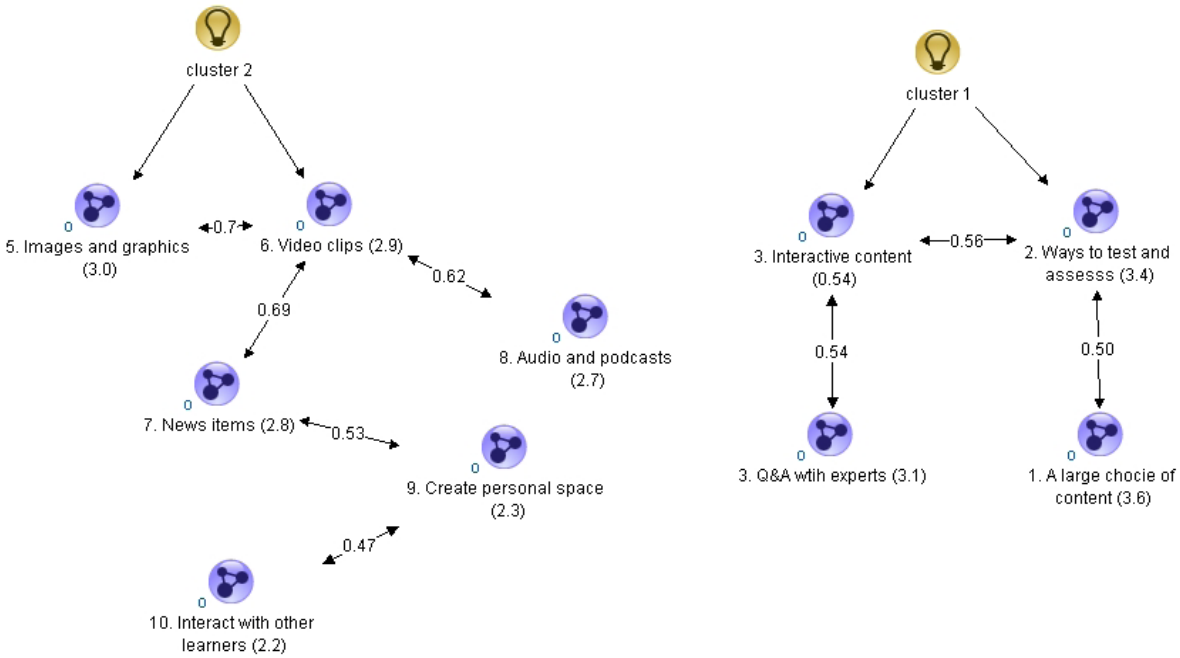
Relative importance based on mean scores for various suggested attributes for OpenLearn functionality

Cluster analysis

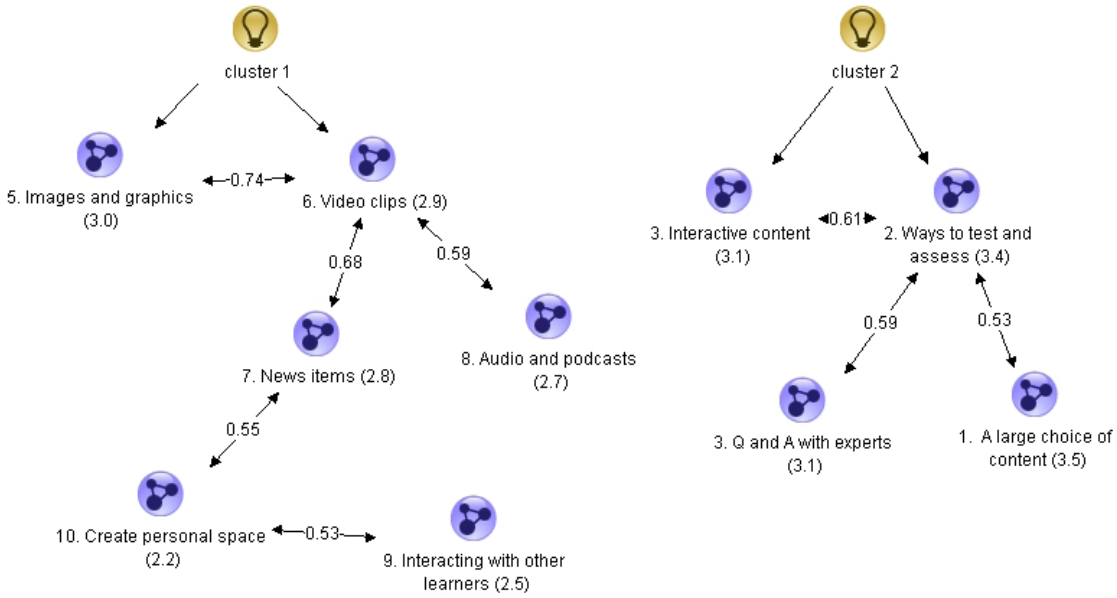
In order to explore the relationships between these variables and to identify any possible types of user a cluster analysis was performed. Using SPSS™ a correlation matrix was constructed for the ten options. This allowed the measurement of 'proximity' between variables, that is how the variables were correlated to each other based on a measures of Pearson's coefficient of correlation. Using Elementary Linkage Analysis (ELA) a 'typal' method developed by McQuitty (1957) and illustrated by Philip et al. (1975) a cluster analysis was performed on this matrix. The method is relatively simple to employ and can be performed manually by following a series of steps on the matrix. This method was employed on both the low and high user correlation matrices and the results are displayed found for low users and for high users. The options have been listed from 1 to 10 in order of the relevant score rankings and the coefficients of correlation as labels on the arrows connecting the option variables. The value of the coefficient indicates the strength of association between the variables with values of 0.7 or more taken as high, and 0.4 to 0.6 as medium. All associations were statistically significant at α = 0.01 or lower.

In an examination of high users two clusters were identified. The first cluster contained a combination of media-related options and socially linked options, perhaps thinking of these as sub-groups of the cluster. The second cluster was interpreted as being based on more traditional learning aspects and included the roles of interactive content, the presence of experts, ways to test and assess, and a large choice of content. The second cluster represents the top four scored options shown in the table. A similar result was obtained for low users with two discrete clusters. Once again the strongest cluster was that which contained the media and social aspects, and the second cluster containing those elements that are often associated with traditional education. Although this was the weaker cluster in terms of the correlations between the variables it contained the dominant rankings in terms of variable scores.

In seeking to label these clusters in terms of the response of individuals it is clear that there might be different levels of importance attached to certain features. This view is supported by the analysis of other questions not reported here.



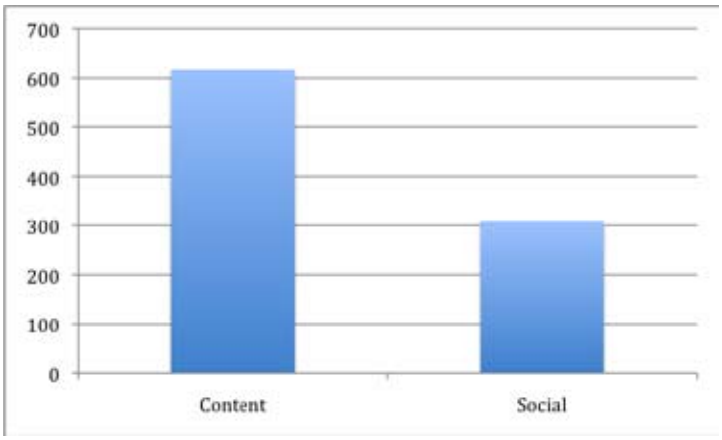
Clusters derived from low users
(numbered by ranking with scores in brackets and correlation coefficients with arrows)



Clusters derived from high users
(numbered by ranking with scores in brackets and correlation coefficients with arrows)

Discussion

The implications of the research into user types are considered here especially in relation to assessment; a feature that is largely absent from OpenLearn yet desired by many users. Cluster 1 for both the high- and low-user data indicates that there is a set of users who are interested in communication and use of non-text media. Cluster 2 on the other hand brings together aspects that can be linked to relatively formal assessment processes and suggest the possibility of supporting links from open education to formal education. The clusters were stereotyped as 'social learners' (cluster 1) and 'volunteer students' (cluster 2) to emphasise the connections in the first case with features associated with social networking, and in the second with the facilities and motivation we might normally associate with registered students. A further question in the surveys considered what actions users took on OpenLearn – these were then divided into content related actions (such as browsing units, seeking the answer to a question, working through the unit, or working with the knowledge maps) and social actions (such as reading or participating in the forums, seeing where visitors come from, using the communication tools, setting up profile information). The balance across the responses is shown matches to the ranking of potential features to show greater activity around content rather than social use.



Balance between content and social actions on OpenLearn (based on collated response to the question *Which of the following activities have you engaged with when using OpenLearn*?)

We can imagine ways in which each of these user types can be supported more fully by the open education movement but it is not yet clear whether the demands are in tension and contradictory or whether each use can be accommodated. From the design perspective both tools and content have been provided with models of use allowed to emerge.

Volunteer students

This group forms the larger set of registered user. Some good examples of support for 'volunteer students' can be identified in our existing site and other enhancements are planned including:

- Greater use of in-built exercises that make the learner act like a student, e.g. learners are asked to produce a 250 word essay on their attitude towards arts; many of them do so even to the extent of including word counts for their unmarked and completely voluntary submissions.
- Building up an interlinking of content and assessment: e.g. the development of key skills within a framework forms one unit, but linked to that are six units that support constructing portfolios for different skills areas. If learners then carry out each of those units they will have performed a substantial amount of work, equivalent to approximately 300 hours of study. This model is strongest in working with collaborating organisations, however by offering the resources on an open basis anyone could develop their own portfolio.
- Content matched to accreditation, e.g. placing all the content of a science course online. In its original form the course combined television broadcast with study, in this new format all content is online and only assessment will be offered. This is a new venture for the Open University but is also being explored by other organisations such as the Open University of the Netherlands and Athabasca University in Canada.

Follow up interview data with users tended to focus on this category of user and it is clear that as well as being interested in additional features that offer support for assessment and further content that they are well-served by the OpenLearn system. These interviews provide us with some examples of real users. While real names have not been used quotes and other details are used with the permission of the interviewees.

Barry (a pseudonym) is 70 years old and retired, but still active as a secretary of a couple of clubs and groups. He has a deep interest in history and is motivated to learn by this interest and love of the subject. He found that OpenLearn resources were a way of expanding his knowledge of this subject area. He studied a unit called 'Classical World'. To him, OpenLearn was good because it also helped him to learn how to study. He says:

> *'I have spent so much money buying books and trawling through them to find bits of relevant information and OpenLearn has come along and placed in my lap the information to get where I want… it also allowed me to set up my own learning system through the Learning Space.'*

Like Barry, Anne is a retired user and found OpenLearn to be a very useful source of knowledge. She is English and lives in Spain, in a small town of around 4000 people. She speaks Spanish well but is interested in developing her skills especially in Spanish grammar. She has looked at and studied three of the Spanish courses in OpenLearn. OpenLearn functions on a number of levels for Anne, supporting her informal learning of Spanish and helping her in her goals of continuing formal education in the future. She says that OpenLearn 'keeps her busy' while she is not studying a course formally. She says:

> *'OpenLearn is an absolutely wonderful thing and I see that other people have said this as well because I knew I was not going to be able to afford it this year to go on with the degree but all the time I am building myself up because when I do sign up for a course I want to make sure I can pass it, I want to be clued right up.'*

For Anne, OpenLearn works as both as a source of knowledge to help her improve her level of Spanish but also as a preparation for taking up further studies in the near future, when she is ready for that.

OpenLearn also appeals for learners who are simply seeking continuing informal education. Charles has a PhD in Solid State Physics. He is as an IT consultant working on complex problems that involve system analysis and the organisation of these systems. He found that the OpenLearn tool for knowledge mapping, Compendium, was extremely useful for his job, because it helps to represent problems. He used OpenLearn to learn about systems and was particularly interested in modelling and mapping, and in using ideas to streamline things at work. He has a strong natural motivation to learn. He likes to learn socially and in order to do that he used the OpenLearn forums. Overall Charles's current informal learning and potential learning is interwoven with his work interests. He used and adapted tools to help him understand, represent and play a part in problem solving in the complex systems that he had been working on and also used this in his non-work life for decision making, he says. He wants to study for an MBA and Compendium helped him to map out issues such as how the course might be funded, the pros and cons of different business schools and motivation for study.

These are three examples of users who have different backgrounds and use OpenLearn to for different reasons, with different goals in mind. Some learners use OpenLearn as a 'taster' of Open University courses. They say:

'I have been favourably impressed by the apparent quality, and quantity, of the open source materials available, which have encouraged me to register for the first time for a OU course.'

'I am overjoyed that this high quality of resource is available for free. I just wish I had more free time and energy to study using it. I hope to complete a number of modules and possibly to go on to get a qualification with the OU. There is a wide variety and good selection of modules available, many of which I find very suited to my interests.'

'I have enjoyed the units I have studied so far. Really good for finding out what a specific OU course is really like.'

Other types of users include those who have some sort of disability or illness, or have a busy domestic life looking after their families, with little time available. These users say that OpenLearn helps them to achieve something that they would not be able otherwise – access to knowledge to keep them intellectually busy. They say:

'At the moment I am not well enough to go out to work, yet I am concerned that the ability to think intellectually will deteriorate if I do not engage in some type of study. OpenLearn is ideal for my situation, and I was delighted to discover this resource, and with the study undertaken so far.'

'I like OpenLearn to keep my brain power and keep me busy. I am a mum of two, one at a nursery and one at school. So I am interested in taking a home study course and I heard the Open University are the best home study courses available.'

Amongst the informal learners group, there are the ones who would like to have accreditation of their learning through using OpenLearn. They are interested in accreditation for a variety of reasons, as for example for continuous professional development or to have formal recognition of their studies.

'Completion certification after knowledge testing would be a major shift in the service.'

'I am interested in formal accreditation, e.g. the ability to submit an assessment or to sit a test.'

Social learners

The enhancements for greater assessment structures are mirrored by ways to support the more social learners.

- Communication support, e.g. feeding the activity that takes place within OpenLearn units and University courses through to social networking sites such as Facebook.
- Developing persistent objects that represent individual users, e.g. views of content through recorded video blogs or knowledge maps. The retained actions of the learner then allow other learners to vicariously gain from their work. Previous studies (Cox et al., 1999) warn though that activities may need to be structured deliberately to generate value for such vicarious learners.
- Reflecting back usage to allow self-certification, e.g. the learning environment holds logged data on the users' interactions with content and forums. This can be used to provide printable records in the form of a certificate that can then be used to show the user and others how much they have engaged with the content. The value placed on these is entirely in the hands of the user and implies a self-formalisation of their approach to the content rather than an accredited validation.

These activities and examples indicate possible areas that we might further develop for OpenLearn, or can be created by others using OER such as OpenLearn as a base for content. While our findings indicate that we need to be wary of ignoring user needs by developing sites that offer no links to assessment and accreditation, at the same time there are users who seek stronger communication structures. Similarly we need to avoid promoting social-networking as suiting everyone; while content may no longer be 'king' it remains important as a way to provide structure and also to establish a gathering point for users. More content had the highest ranking from the users we surveyed, and it is also apparent from analysis of search terms used that the subject content provides a major reason for people to arrive at the OpenLearn site.

New ways to learn

OpenLearn helps content moves towards the Web 2.0 paradigm.

The education system appears to be on the edge of a revolution with policy pressures for expansion of the formal routes for education (Dearing, 1997) alongside changes in the way that people interact with each other and information through online services. There has also been growing recognition of the importance and role of informal learning defined by Livingstone (2006) as 'any activity involving the pursuit of understanding, knowledge, or skill that occurs without the presence of externally imposed curricular criteria'. Informal learning can be triggered by work requirements and involve support and motivation from others and so it can be useful to also consider the distinction into self-directed learning described by Livingstone as 'self-directed informal learning per se is most simply understood as learning that is undertaken on the learner's or learners' own terms without either prescribed curricular requirements or a designated instructor' (p. 205). The incidence of informal learning in the adult population is extremely high with a series of surveys based on early work by Tough (2002) indicating about 80% of the adult population will identify themselves as having carried out informal learning with an extent of around 500 hours per year. These surveys in general pre-date Internet services and so raise the questions both how the Internet can serve the need of informal learners and if the presence of Internet services will change the attitude of learners towards informal approaches.

The general changes that have been associated with the explosion of internet services has been characterised as 'Web 2.0' (O'Reilly, 2005) as an interaction between the available tools and the willingness of people to make use of those tools; provided they are available in the right form to allow easy take up. While there was initial discussion of whether this labelling was a fashion, as many of the characteristics that were outlined had existed from the earlier days of the web, it has become clear that the Web 2.0 tools are allowing new ways for people to build their own environments and integrate these with their lives. The value of the approach is reflected in the huge popularity of sites that follow the paradigm, such as netvibes, Facebook, and MySpace.

We need to consider whether the characteristics of Web 2.0 have implications for education and in particular whether the opening up of free resources is a necessary and reasonable reaction to the use of Web 2.0 tools and their influence on the attitude of users. Learning appears to lend itself to an overlap with the way in which the Internet can support lives. Learning depends on interest and information and can build on interactions. On the other hand formal learning has some issues in tension with the openness of the Internet acting in contrast to curriculum and pacing to encourage time to push through the tasks necessary for the grounding of learning experiences. This aspect of the 'stick' of education can be seen as valuing the control, structuring and assessment associated with education. What we need to explore is how we can remove some of these supports and still offer valuable learning opportunities, and whether the 'carrot' of openness and interaction with others can compensate for the more direct motivations in traditional education.

The Internet is not necessarily utopian and the support that formal structures offer should not be dismissed too easily. A competition for attention means that users can be distracted from their intended purpose and that chance encounters with information may be an unsatisfactory solution in comparison with targeted offerings that constrain and direct interests towards specific goals.

Web 2.0 encourages us to address more radical interpretations of how we can use the free provision of information to offer alternative routes to both access and use of the web for learning. These can challenge the university system as well as offer ways to increase the reach of current providers. In the next section we review the characteristics of Web 2.0 within an activity framework and see how this helps us view free and open provision as a key component to align education with Web 2.0.

Web 2.0 characteristics

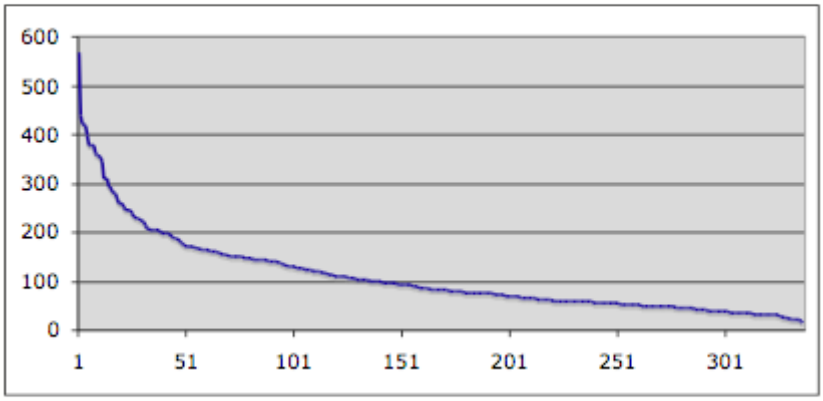
O'Reilly (2005) presented a review of what he saw as the new ways in which some people were using the Internet. He characterised these as Web 2.0 and as part of the article described eight design patterns that could be followed to fit in with the Web 2.0 paradigm. While other ways to break down Web 2.0 exist, these principles have shown perhaps surprising robustness as the reference point for Web 2.0. In this view Web 2.0 is not a new set of tools but rather a description of emergent patterns of use. The eight patterns then give a checklist on behaviour that aligns with other successes for the web.

1.	The Long Tail: Reach for many small niche areas, rather than only mass interest.
2.	Data is the Next Intel Inside: Use the combination of data from interactions and the underlying structure to develop ways to improve services.
3.	Users Add Value: Involve users as active participants so that they add to the data available.
4.	Network Effects by Default: Gather information from the network and all users, not just active participants.
5.	Some Rights Reserved: Avoid limits on what users can do that are caused by rights and restrictive conditions.
6.	The Perpetual Beta: Release early and release often so that features appear and get judged by users.
7.	Cooperate, Don't Control: Operate in an open way so that others can make use of your services and you can call on the services of others.
8.	Software Above the Level of a Single Device: Consider other devices than just the PC by avoiding formats that are difficult to rework.

Design principles of Web 2.0 summarised from O'Reilly (2005)

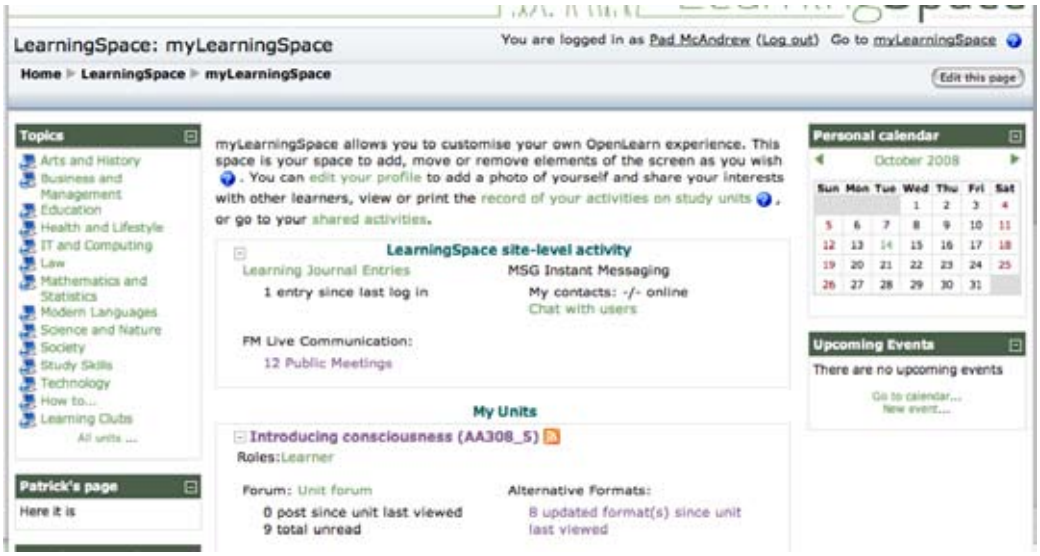
The potential issue with the design principles shown in Table 1 is when and how to apply them? In particular do they help us evolve our understanding of the structures that should be applied in making the move from a formal educational base to support more informal learning? One approach is to consider alternative ways to view the patterns adopting a representational and analytic approach from activity theory to bring out why it is reasonable to adopt the Web 2.0 design principles and to relate them to the work we are carrying out in an initiative to provide open educational resources. The openness of OER matches content into these design principles and in the case of OpenLearn we can see evidence of each of them in operation.

Long Tail: the long tail (Anderson, 2006) suggests that once more specialised content is available so that it is easily available, findable and stored at low cost to the provider then the model of access changes. In traditional markets the 80/20 rule has been resilient leading to the expectation that 20% of stock will lead to 80% of activity, hence, under this model, it makes sense to concentrate on popular hits. However the long tail principle suggests instead that there will be demand across the full range. Using data from tracking use of materials on the LearningSpace server the access across units can be examined. Considering a sample week (12–18 December 2007) activity as measured by counting unique visits (defined as activity from a unique user with no break in page impression that is longer than 30 minutes (JICWEBS, 2001)). The logged data shows that there is demand for all 337 available units ranging from 833 visits to S324_1 *Animals at the extreme: the desert environment* to 17 visits to a unit on 'Governors' target setting in primary schools'. The curve of visits shows the long tail of accesses predicted by Anderson.



Long tail behaviour exhibited by access to units (1 week of data)

Data driven: for registered users OpenLearn offers a 'myLearningSpace' area that brings the activity associated with each user together and displays it. This encourages both individual activity that can be reflected as progress through the units of material, and a shared view of the user generated activity available as forum posts or other items such as knowledge maps.



myLearningSpace gives a personalised view of the content

Users add value: in the LabSpace users can download and change the content. Here we can see clear new value in the form of units developed from scratch, for example a new unit to look at ways of working online, or transformed from existing material such as the translation of a unit on genetics from English into Catalan. There are relatively few examples of such user generated content, however there are also many more examples of user augmented content as users add forum comments and journal postings.

Network effects: Users can rank the content, shown as a star rating, and we use the level of activity within units to let users know what is popular. Further data is also logged but not exposed back to the users. For example, tracking data indicates that over 50% of users of the site come across OpenLearn through search engines rather than directed and sharing the search terms they use may offer insight into what might be of interest and potential connections. Such users may have a low commitment to using the site at first and we have a large number of users who will view only one page (for example for a sample week 57% of users). This is a common finding for popular Internet sites and can be explained as users finding instantly what is needed, spending a long time viewing a single page, or printing before moving on, as well as less satisfactory reasons such as lack of interest or confusion. To help such users 'Learning Clubs' are now implemented that will help gather those with shared interests, even if this is not covered by current content, and give all users a place to explore the site building on the activity of others.

Some rights reserved: a key aspect has been the adoption of the creative commons licence and the switch from a model of protecting content to promoting the possibilities of reuse. The expectation was that this reuse would mainly take place on the OpenLearn sites. However a major aspect of the release is to permit the transfer of content into other sites. Shortly after launch content was being uploaded into alternative environments such as netvibes (McAndrew and Hirst, 2007). Initially efforts to achieve this meant reworking content, however with the adoption of RSS feeds this has been made a supported feature of the OpenLearn site. Content originating from OpenLearn can now be found as more than ten other forms of shared content and can be reached within social environments such as FaceBook and MySpace. A consequence of such release is a reduction in the ability to track and collect experiences into a single space, indeed there may possibly be many more cases than we are aware of.

Perpetual beta: the concept that a site is never perfected and always subject to feedback and improvement applies at two levels to OpenLearn. First in the software environment and second in the open content itself. The core software for OpenLearn is the Moodle environment which is subject to change both by those working on it at the Open University but also by the wider community developing the shared code at moodle.org. Open source operation meant that the local developers had to adopt a new attitude, for example using the beta versions of the software released by the community. Latest versions were often needed in order to build in the extra features that were needed by the OpenLearn site over a more standard instantiation of Moodle focussed on providing courses to registered students. The university however did not wish to abandon its own testing processes and so a hybrid approach was adopted with checked releases at regular

intervals. A similar hybrid turned out to be needed for the open content. Early in the initiative there was a point of conflict in quality procedures recommending additional checks as material was released to the public, this led to bottlenecks in approval. At the same time feedback from focus groups including those involved in adult education showed that only providing high quality content inhibited those people from making changes to it. A decision was therefore made to relax some of the checks and place them after the release of the content on the OpenLearn servers. This highlights two potential benefits in adopting the perpetual beta philosophy in that it can free up approval processes and also act as an invitation to take part in a process to improve the content.

Cooperate: the OpenLearn site is not just about content it also offers sense-making tools. Such tools can open up a peer-to-peer collaboration route but also offer a way for users to reflect on the content and share those reflections with others. Some of the tools are innovative such as knowledge mapping or video conferencing, these operate alongside tools provided by the Moodle environment such as forums and learning journals (essentially blogs attached to the content). There has been relatively low use of instant collaboration tools (Little et al., 2008) balanced by wider use of tools that can be used on an individual basis but are also open to other people to see the result. Tools such as the learning journal offer a persistence of experience and lead to a model of delayed collaboration that may connect with the ideas of distributed cognition (Rogers, 2006) and vicarious learning (Mayes et al., 2001). The cluster analysis presented earlier shows that the site supports different types of user who were drawn either by the content or the social aspects. However content at present provides the main attraction of the site to users.

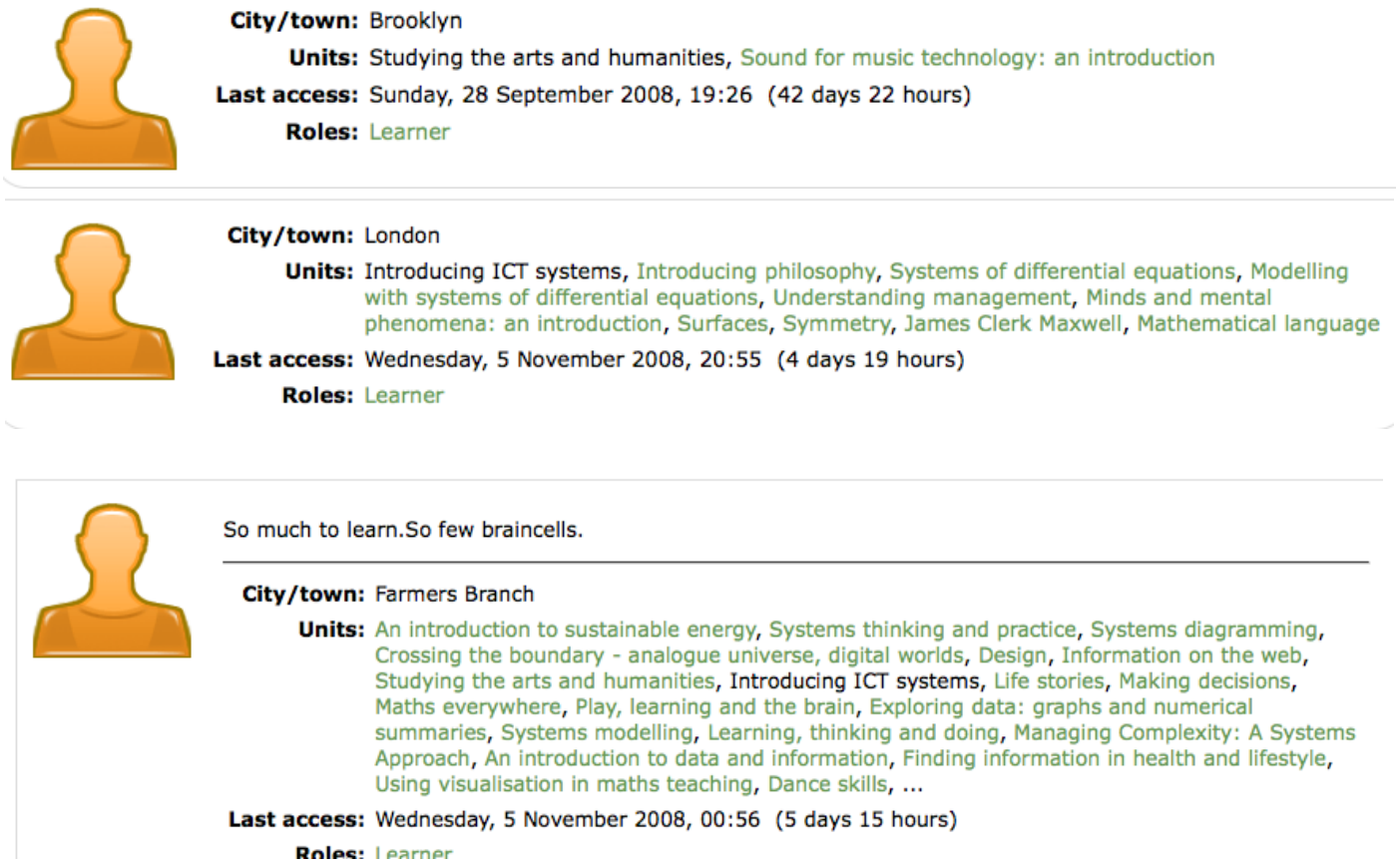
Device neutral: the main platform that is presented by OpenLearn is the web-based Moodle environment, however the core content is in XML and transformable to other formats. XML (Bray et al., 2006) is well established as a powerful way to separate out content from the end device and is fundamental to the core technologies of Web 2.0. In OpenLearn we have made use of the flexibility to move from an initial availability only as either the raw XML and its rendering into the Moodle environment to now offer a range of formats such as IMS Content Packages, IMS Common Cartridge, SCORM and XHTML suitable for printing. Two illustrations of exploiting the format to be device neutral are the transfer of the content into a form targeting mobile devices through a secondary site wattpad (http://www.wattpad.com/) and the construction of translation pipeline for the accessible content format DAISY (Kerscher, 2000). Through DAISY OpenLearn is then able to take advantage of automated production of audio versions of content and integration with reader software designed to help access.

Personalised learning

OpenLearn creates the opportunity to generate your own personalised learning experience.

The term Personalised Learning Environment has emerged to describe the alternative to an institutionally approved and supplied virtual learning environment. The term is generally applied to student adoption of tools from the Internet such as blogging, picture and resource sharing and instant messaging as a preferred and personal way to operate rather than the imposed approach from an institution. As described by the JISC funded PLE project 'An alternative approach would be to locate a large amount of VLE functionality with the learner either as a desktop application or an independently hosted portal. Institutions would still provide content via repositories, undertake assessment and so on, but learners would interact with these using their personal systems (Personal Learning Environment), comprising their preferred tools and ways of working' (http://www.cetis.ac.uk/members/ple/). This description focuses on the tools that learners may gather and find, and assumes that the content and curriculum remain under institutional control. However under an OER model the choice of what and when to learn is also transferred to the user. Goodyear (2000) points out that much of how we teach depends on the expectation of a '*compliant* learner' who will carry out tasks in the order and manner in which we have set them up to happen. Experience in OpenLearn supports the view that some learners will act to comply with directions but many others cannot afford the time to carry out all tasks while also having wider interests than might be expected.

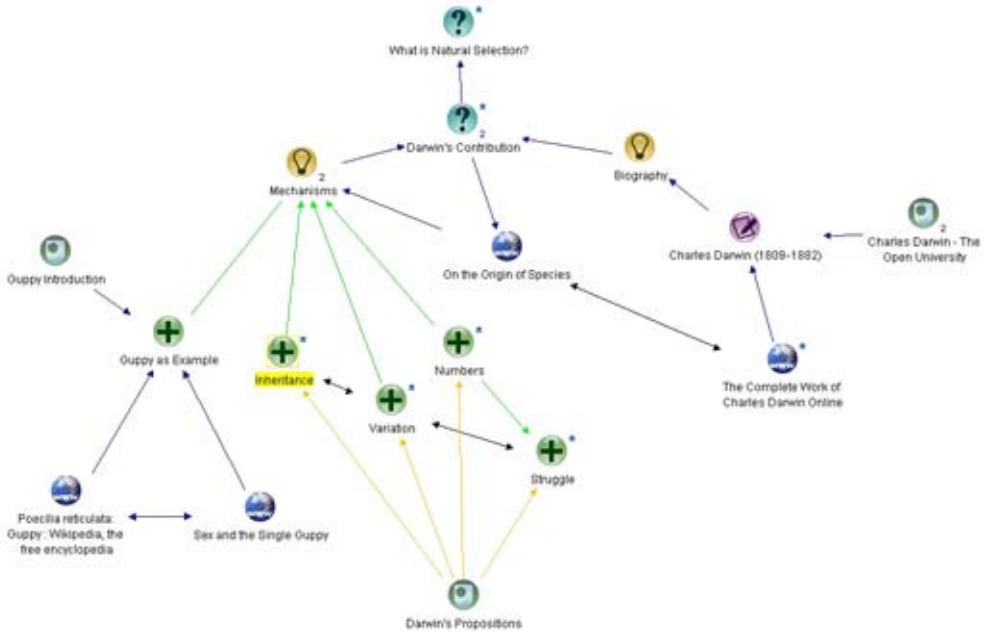
OpenLearn offers some support for building both a collection of tools and collection of content. The 'mylearningspace' feature gathers together content that the user registers interest in by joining. To avoid clutter users are automatically removed from registered interest over 60 days so the data provides a snapshot of the areas of interest for each user. There is no need to join a unit before reading content and indeed no need to be a registered user, so the data from the user enrolments is only a partial view of interest. Sampling this data it was found that around 20% of users will focus on just one unit, however more than 50% of users will join five or more units. These then form a custom curriculum for the user presented within their profile or 'mylearningspace'.



The units that three sample users have 'joined'

Looking at the examples shown we can see one case where the user has only joined two units, in the second another user has linked to ten units that are mainly associated with technology but cross over into science, philosophy, business and general interests. This mix of units mainly from one area but bringing in variety is typical of the user profiles on the site where users by joining several units users can provide themselves with a curriculum that would be hard to find in conventional education structures. The third example represents someone who has been keen to explore across the range available to them.

The tools that are provided on OpenLearn also give users the ability to personalise their view of content. This can be achieved in several ways such as taking content and feeding it into other environments, generating conversations around the content using FM video conferencing, and building customised linked maps of content in the Compendium knowledge mapping tool. User-generated maps of content have been produced, for example related to Darwin's view of natural selection. As well as linking to the content available on the OpenLearn site, this map links out to resources that have not been supplied by OpenLearn such as the collection of manuscripts hosted by Cambridge University and Wikipaedia entries providing more detail about the fish studied by Darwin.

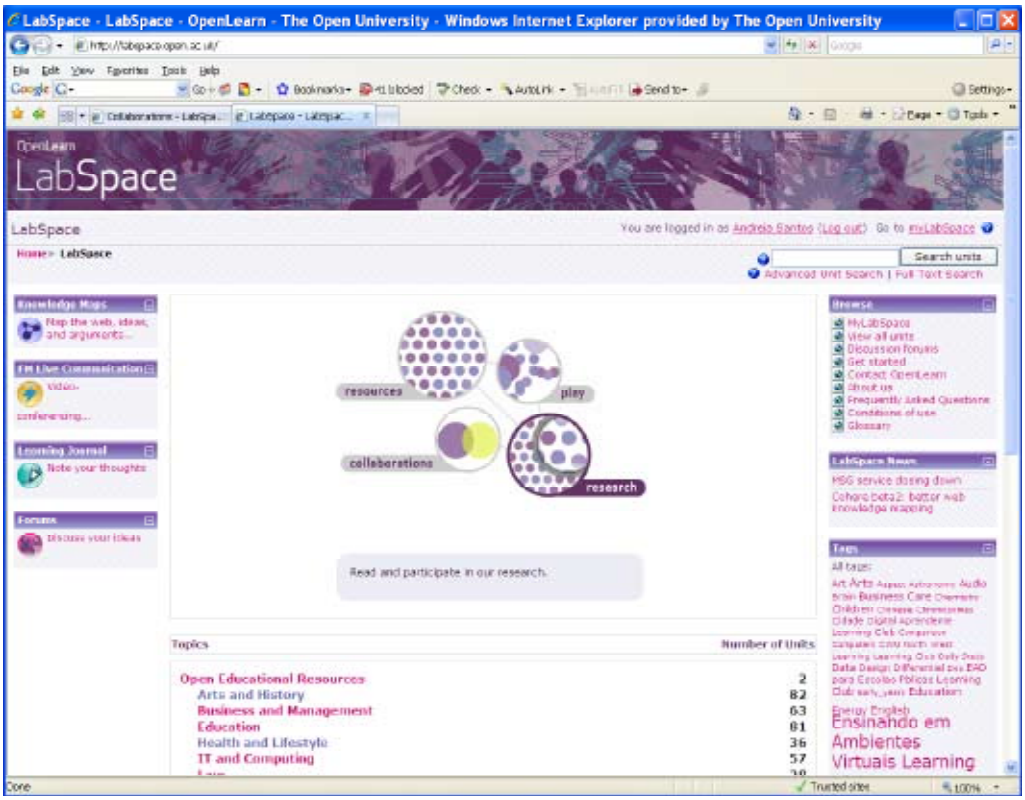


User-generated Compendium map linking content on OpenLearn with external resources

5 OpenLearn modes of use

Content use, creation and repurposing

OpenLearn encouraged collaborations with higher education institutions worldwide and also with higher education institutions in the United Kingdom. Many institutions took up this role of OpenLearn 'collaborator'. By means of collaborating with these institutions it was possible for OpenLearn to understand better how communities can be supported in the use and re-use of OERs. Different collaboration projects were set up throughout 2006–2008, and each one had a 'mentor' from the OpenLearn staff. Most collaborations were set up through staff personal contacts and networking. Conference presentations, for example, were essential to create such relationships.



LabSpace main page – Collaborations area

Why collaborate?

Different modes of use appeal to different groups; some are motivated by tools, by content, by space for a community.

Collaborators had different motivations. Some benefited from a space in which to create and support a community, others felt it was an opportunity to be associated with the Open University in an informal way, others were interested in researching the tools available in the website for teaching purposes, and others wanted to publish their own materials and translate some OpenLearn ones. Whatever the reason, collaborators feel that it is an opportunity to start what could be a long-term and successful relationship with the Open University, and draw on all the resources and expertise it offers to enhance teaching and learning at a distance.

'OpenLearn was a FABULOUS platform for my students, that is the reason for coming back now. From my perspective as a faculty member, OpenLearn is easy to populate, edit and move. The students' bios and contributions all in one place make it very user friendly. The technical support for training purposes and problem solving was timely and professional. I am deeply grateful with the OU UK team. The discussion forum, chat, user location calendar and Vlogs were highly used by the students. The Google map including user ID and location to immediately communicate is terrific!'

Dr Yolanda Gayol, Fielding Graduate University, USA.

The collaboration projects between the users and the provider were extremely beneficial in the sense that they enriched the website in many ways: by encouraging users to bring new content to the website, by disseminating the project to a variety of audiences worldwide, by creating a network of end-users who made the website more dynamic and visible, to cite a few.

Snapshot: Fielding Graduate University, California, USA

Main motivations for collaboration: space for a community and access to tools

Fielding Graduate University, in California, is a very successful OpenLearn collaborator. The educator in charge of this collaboration uses OpenLearn to support the doctoral level course she teaches: Critical Pedagogy in Second Life – Recreating Social Movements in Immersive Environments. As a result, a number of user-generated content has been created and is now available in OpenLearn, and further collaborations with the institution have started.

Fielding Graduate University collaboration area

Fielding Graduate University Collaboration shows us that 'motivated educators act as catalysts for change'. They have the potential to explore different possibilities and modes of design and use of OERs. This is beneficial for their institutions and for the OER audience in general.

The role of the mentor

The role of the mentor is to liaise with the team internally to establish the collaboration and also to liaise with and provide support to the collaborators themselves. This support is provided at various levels, from helping them with specific technical queries to explaining how the environment works, giving ideas for use and providing workshops. The collaborations area of OpenLearn can be used by the institutions for various purposes, such as: to publish their own materials, to set up discussion forums and to bring a community together. Each collaborator has its own area that is set up with granted permission of the OpenLearn director.

Mentoring has an important role in helping collaborators to do their projects. Very often collaborators are self-motivated and have many ideas they would like to develop in OpenLearn, but not always they are fully aware of the variety of possibilities that the resources in OpenLearn offer. For example, in the case of Fielding Graduate University, the mentor booked a Flashmeeting with the educator in charge in order to explore all the tools of the site and the potential for content repurposing and creation. Fielding then decided that they would focus on creating new content through interaction with their students during a course presentation; and that this content would be available for any to access in the world; with the possibility of being re-used on a second presentation of the course and by any other interested party. The next course Fielding started to offer is '*Training trainers on how to deliver distance education courses using Moodle*'. This course aims to teach educators how to manage the Moodle platform using the principles of accessibility, usability and navigation in the virtual sphere, as well as to make them reflect on how to transfer the background knowledge on adult education, experiential learning and face-to-face training into distance education course design. This new course is very important to OpenLearn users in general, because Moodle is the platform that hosts OpenLearn courses; at the same time allowing 'in situ' changes of the content in the website.

The mentor is a point of contact in the Open University, usually within the OpenLearn staff team, and someone who is able to advise and help collaborators on the queries they might have. Usually collaborators are very self-driven and mentors dedicate very little time to help them devise a project for their work. After the initial phase, collaborations are usually run without the need for constant support.

Snapshot: The OpenLearn Scotland Collaboration, Scotland, United Kingdom

Main motivations for collaboration: content and tools

The OpenLearn Scotland collaboration started in November 2006 and is ongoing. It aimed at developing new units in OpenLearn, in particular the OpenLearn Scotland unit and associated Scottish units, in conjunction with the Edinburgh office, Open University in Scotland.

The Curriculum Development Group in Scotland was keen to promote Scottish-based examples and materials for their national audience. Their objective was to demonstrate that the Open University in Scotland has local materials in addition to using them for promotion purposes to attract more local students. Their target was to launch 30 units in OpenLearn by November 2008 and they successfully achieved it.

The main challenges were to identify appropriate materials within their course production, and this led to many meetings, emails and phone calls. Although colleagues could identify these materials very often locating their digital version proved difficult. By putting them up in OpenLearn, they were also gaining a knowledge management system.

Developing this collaboration involved patience, persistence and communication, as with many other collaborations. Allowing 'time' for collaborations to develop seems to be essential for their success.

Similarly to the OpenLearn Scotland collaboration, the University of the Third Age (U3A) started in 2006 and is ongoing. It is another example where time and commitment are essential to make the collaboration follow through.

Snapshot: The University of the Third Age, U3A, United Kingdom

Main motivations for collaboration: content, tools and space for a community

The University of the Third Age, or 'U3A', is a worldwide movement encouraging older people in the third age of life (those no longer in full-time gainful employments) to take up or continue educational interests in friendly and informal settings.

The collaboration started as a result of joint interest in exploiting OpenLearn for U3A members and as a result of signing the memorandum of understanding. The main goals of the collaboration are to:

- assist U3A to adopt OpenLearn units and tools for the benefit of all their members but especially those members taking online courses;
- analyse how U3A plans to make use of OpenLearn in comparison with other institutions.

The challenge with U3A is that as a voluntary group it is taking time for the senior members to identify and progress U3A's involvement with OpenLearn. It can take a long time to develop an active relationship with collaborators especially when new technology is involved. The continued evolution and sophistication of the site means that cascade or snowball techniques' of training/mentoring will be needed to roll use out to a very distributed member-based organisation.

Why do institutions like to collaborate with OpenLearn?

Institutions have different reasons to collaborate with OpenLearn. They like the freedom to collaborate in the ways that most suit them: their needs, their visions, their resources. As with individual users and educators, institutions usually have motivations that represent their commitment to open content and distance education in general. It is also an opportunity to be associated with the Open University without having to form a legal partnership – OpenLearn allows a much more fluid and informal relationship.

Overleaf is the case of UnisulVirtual. Amongst other reasons, the institution supports the idea that being associated with OpenLearn and the OU UK is good for their profile and enables them to have an international presence in the OER movement.

Snapshot: UnisulVirtual collaboration – Santa Catarina, Brazil

Main motivations for collaboration: use of OpenLearn content and tools; content production and informal relationship with the OU

UnisulVirtual is the higher education department of Unisul, University of the South of Santa Catarina. UnisulVirtual has been translating and adapting OpenLearn materials into Portuguese. They have also been publishing their own content in the website and whenever is possible, these materials are translated by them into English. They decided to team with OpenLearn and experiment with content repurposing and production. They are also exploring the various ways in which these resources could be used in their own curricula to enhance the learning experience of their students.

The UnisulVirtual collaboration is what we term 'an institutional collaborator'. This is because the decision to collaborate with OpenLearn has been made at a board level at UnisulVirtual, rather than being initiated by an educator. UnisulVirtual decided to allocate a staff member to coordinate the collaboration. The main role of this coordinator is to identify ways in which OpenLearn resources can be used by UnisulVirtual, at the same time motivating staff members to foster the use of OpenLearn resources by the learners within their discipline.

This collaboration exemplifies the various phases in which institutional collaboration projects are usually undertaken: 1) purpose identification, 2) staff allocation, 3) mentoring, 4) collaboration plan, 5) implementation, 6) evaluation, 7) development of further activities. These steps very often overlap and are by no means an exhaustive list. However, they represent a pattern that has been found in collaborations that have been initiated at a board institutional level. They usually happen in a cyclical way along the duration of the collaboration.

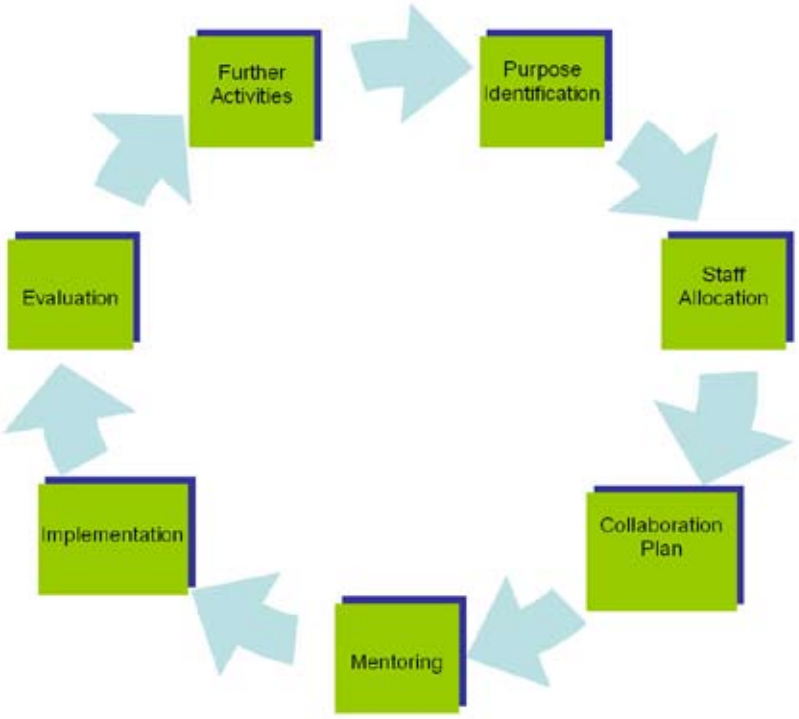
Institutions like the freedom offered by OpenLearn to experiment and undertake informal relationships with the OU.

In UnisulVirtual's case, staff engagement is the word of order for the collaboration to be successful at the various levels they proposed: for the resources to be used as support material and for tutors to have the chance to publish their own production. The latter can be seen in two ways. As a motivation for tutors to engage with the concept of OERs and bring in this novelty to their teaching expertise and as a way in which the institution can show their quality standards to a wider audience and have indirect benefits from it (course registrations, reputation, etc). In this sense, undertaking this informal relationship with the OU means partnering with its reputation, values and mission.

UnisulVirtual has made investments in this collaboration with OpenLearn. In fact, all collaborations involve direct or indirect investment, which can be quantified by tutor and technical staff time, for example. While translating resources, UnisulVirtual paid a third-party agency to do the work of transforming the content into XML format for publication in OpenLearn. They also paid translators and the collaboration coordinator. All this investment is because the tutors and course coordinators at UnisulVirtual believe that there is a lot of scope for them to showcase their own materials in OpenLearn, and that the students will be interested in the OpenLearn materials to support their learning.

The collaboration cycle

The cycle below represents a typology of the usual process of an institutional collaboration. These steps quite often overlap and are not exhaustive. Collaborations do differ but most of them fall somewhere into this cycle: most of it happens informally, as for example, the collaboration plan and the evaluation of outcomes. As partnering with OpenLearn does not involve any legal agreements or direct financial investments, institutions have the freedom to do as much as they want and to target the audience they want. It is noticeable, however, how these institutions pride themselves on their work on OpenLearn and how they are grateful for the opportunity to liaise with the OU staff more closely and to explore the various OU resources to enhance the teaching of their own institutions. Most of these collaborators are universities of a large size and although they would have the motivation to launch their own open content initiative (of course, however, on a much smaller scale than the OU does); they feel they do not have the expertise or the resources to do so. They prefer not to duplicate efforts and collaborate with OpenLearn instead.



The collaboration cycle

Snapshot: UNIDERP, Campo Grande, Brazil

Main motivations for collaboration: content and research production

Institutional collaboration success appears to be a cross between individual motivation and institutional motivation.

In the case of UNIDERP University for the Development of the State and the Region of the Pantanal) the motivation for the collaboration started with an educator being interested in using OpenLearn as an action research project to enhance teaching and learning online in their subject area, English as a foreign language. The institution soon got involved in establishing a project of a broader scope, research-based, and decided to involve a bigger team of educators. However, the institution identified the need for these educators to have a high profile in research and therefore selected a group with high qualifications within the institution (such as PhDs and professorships) to lead on the project. This meant that the educator who initiated the project, who did not have a PhD, although still part of this new group could not take the lead on the collaboration and draw on their own motivations. With the merging of UNIDERP with another institution, all the educators with a high profile in research got committed to new institutional priorities and the collaboration did not follow through. Although a very successful collaboration in terms of what it aimed to do and what they achieved while doing what was proposed, UNIDERP's case illustrates that some collaborations have their collaboration cycle broken at some stage, and in this particular case it was on the implementation phase. A cycle of collaboration can be identified that builds on institutional and individual educators motivations. For all stages in the cycle to progress these motivations need to be aligned.

It is intentional here to show an example of a collaboration that did not work as expected to illustrate that working with collaborators is not always straightforward. It is an iterative process with a lot of negotiation, communication and exploration of shared interests. It is also an activity that involves institutional priorities, human resources allocation and commitment to time and effort. Successful communities are the ones that evolve to keep pace with the changing needs of its members and owners (Kim, 2000).

Below is an example of an institutional-based collaboration which draws upon all the steps of the collaboration cycle. It is a collaboration sponsored by the Open University, at the same time counting on staff's own motivations for participating.

Snapshot: Open University Internal Collaboration, Milton Keynes, United Kingdom

Main motivations for collaboration: research production and staff engagement

This is a research collaboration based on two case-studies carried out as part of an OpenLearn-related project that is investigating the uses of computer-mediated communication in 'informal' (not leading to certification) yet institutionally-hosted online spaces. The broader project consists of an ethnographic investigation into engagement with OERs provided by OpenLearn, and each of the case studies revolves around a collaborative 'pilot learning project' involving OpenLearn staff, a subject specialist based in an academic department of the institution and a number of participant-learners. The projects were set up with the twofold aim of providing a context at the boundary between 'formal' and 'informal' learning whilst exploiting OpenLearn as a test bed for university staff to trial innovative approaches to teaching and learning afforded by the technologies made available by the initiative.

Ferreira (2008) presents a preliminary discussion of the two case studies from an institutional perspective. The case studies were carried out as part of the project *Communicating, Learning and the in-between: a study on the impact of open-access, informal online learning environments*, a project funded by the Open University Centre of Excellence in Learning and Teaching (CETL) COLMSCT (Centre for Open Learning of Mathematics, Science, Computing and Technology) and further supported by OpenLearn.

The case studies shed some light on the combined importance of facilitation and subject expertise in the establishment and growth of a lively learning community. A crucial finding has been that it is possible for OpenLearn to guarantee engagement of academic staff with the more experimental aspect of the initiative by providing support to activities that are directly meaningful to their own professional practice and interests. Although staff buy-in may require subtlety and diligence to obtain, partly because of the onus it imposes on already busy professional lives, the pilots illustrate that this costly element can be secured inasmuch as good communication and some degree of flexibility provide the necessary support for collaboration in an enthusiastic pursuit of potentially very different goals.

The benefits of being open

OpenLearn has indirect ripple effects because the work is open.

The work in OpenLearn is open to all. Registrations on the site are free, and users are encouraged to share their production with others. OpenLearn has a strong web presence and various other communication media have been used throughout the externally-funded phase of the project to tell the world about it. Some of these media include radio programmes, prizes, newspaper features and, above all, personal communications and networking.

The impact of networking, for example, is visible in a number of ways. Networking in conferences allowed OpenLearn staff to increase the number of collaborations with OpenLearn. Fielding Graduate University and UnisulVirtual are some examples. These collaborations and contacts, on their turn, prompt other potential users and collaborators to become interested in the website; as well as help to promote it in the media and on the web in general – the ripple effect.

In July 2007 UnisulVirtual invited its mentor to run a workshop in Brazil to explore the various resources available in the website with their tutors and course coordinators. UnisulVirtual made internet entries about this workshop that later were found by another institution which became a collaborator as a result – The University of Football.

Snapshot: The University of Football Collaboration, Sao Paulo, Brazil

Main motivations: opportunity for content publication and space for a community

The University of Football is a new venture supported by the Brazilian Ministry of Sports. The University of Football started as an internet portal in which sports professionals and the wider audience could register and have access to the latest sports news and interviews, as well papers and working groups. The portal now has about 40,000 unique registered users and about 35 different working groups, who use the online medium to exchange information, write papers and discuss the applicability of football in a variety of subject areas for educational purposes.

The University of Football is moving towards achieving all the 'collaboration cycle' and assigned staff members to work alongside their community of registered users, identifying and feeding content into their working groups. For them, having a space for their communities to engage and to make content available is what appeals the most in OpenLearn.

As a result of this collaboration, further business are being brought to the Open University, in a more formal level, as the University of Football is negotiating the writing of sports-related courses with the OU team to be offered conjunctly.

The use of the tools for social learning

Users use collaboration tools in a variety of ways often differently to that expected.

OpenLearn social learning tools are frequently an attractor of users. Our research shows that very often however, the use of the tools differs from what has been initially expected by the OpenLearn team. When the website was designed the tools were made available with the expectation that users would use them to discuss the content in OpenLearn, as a way to interact with other learners and enhance their learning experience. By registering on the OpenLearn website and enrolling in a unit it is possible to locate other users across the globe that are enrolled in the same unit.

A few related interactions were registered but these mostly happen in the discussion forums rather than by the use of FM or Compendium tools. However, users tend to use both tools for other purposes, such as the discussion of topics of their own interest. This mode of use, although not predicted to be the dominant one, has revealed itself very valuable for learners, especially the ones we term 'social learners'. These learners like to engage in discussions and in learning by sharing with others, as part of a community. Community, in this sense, are 'people seeking commonality and shared interests' (Palloff and Pratt, 1999). These commonalities however grow over time and a real community takes time to become strong and productive, with shared understandings and its own rules of engagement. A community (of practice) is not just an aggregate of people who have some sort of characteristics or interests; it is not a synonym for group or team. A community is defined by the actions negotiated by its members (Wenger, 1998). The value of OpenLearn is not only on the content it offers, but also in the tools it provides for free to users, due to the wide variety of purposes they can have to enable people to learn and to engage in their communities.

Snapshot: COLEARN collaboration, Portuguese and Spanish Speaking Countries

Motivations for collaboration: tools and space for a community

COLEARN is a community of curriculum designers, didactic experts, lecturers and researchers interested in investigating the uses of OpenLearn tools. Participants are from several institutions and are speakers of Portuguese (as a native or foreign language). These institutions are based in Portugal, Brazil, France, Chile, Spain and the UK.

The main reason for this collaboration was the great interest of participants in getting more information and sharing their practices around OERs and the OpenLearn tools (Compendium and FM) in Portuguese. The space for the community is hosted in the Collaborations Area of the LabSpace in OpenLearn.

There are several achievements from this collaboration: the production of state-of-the-art research papers, several open learning materials in Portuguese and Spanish, and the winning of international prizes, such as the Microsoft's 'Innovative Educators' competition in 2008.

Repurposing OER: a matter of acculturation

In OpenLearn the LabSpace offered the ability to upload and download versions of all the content for use under a rework and remix model. This feature was provided from the launch of OpenLearn but was not heavily used. Focus group discussion of the process of reuse by educators identified issues with both the technology and the concept of reuse.

Snapshot: Milton Keynes Adult Continuing Collaboration (MK ACE), UK

Main motivations for collaboration: to help address OpenLearn initial research question and to disseminate the initiative amongst the local teaching community

The aim of this collaboration was to identify the possible ways in which tutors of Milton Keynes Council Adult Continuing Education (ACE), could make use of OpenLearn materials in their language classes. It also aimed to disseminate OpenLearn to the local teaching community. After engaging with the website the tutors came to the conclusion that OpenLearn could definitely be used by them as a resource to their classes. However, the site did not yet offer courses in their target languages, such as Spanish and Portuguese, because it was in the early days of the initiative.

Comments from participants included:

'I have used Compendium and created a lesson plan and it has worked…so I think I would use Compendium for my classes.'

'I could use FM once a month or so to get the students to speak to each other.'

'Why would I be interested in putting all this work into it – download, translate and put my version back there? There's a lot of work to be done, and complicated work. Why should I be bothered to do that? What am I going to get from all this?'

'I look forward to the day when I can do all these mapping and I can use it with my students and challenge them. At the moment, I'm just beginning.'

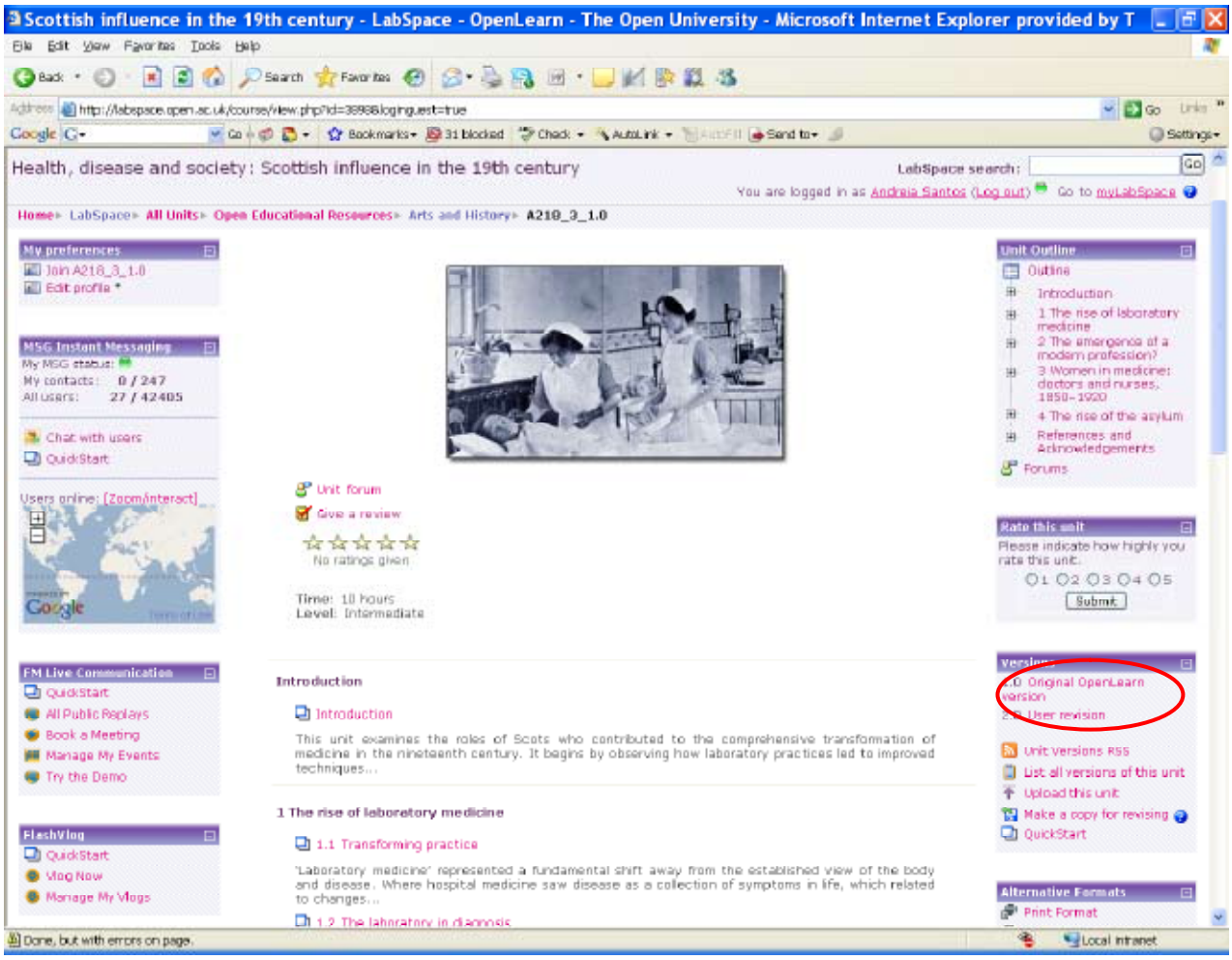
'OpenLearn is innovative. It is great that the tutors and learners can use the resources for free'

The quotes by the tutors presented here show that OpenLearn is seen as a great innovative initiative with interesting tools. However, they also show that there needs to be time commitment in two ways by the user: 1) time investment to learn how to use the tools and 2) time investment out of real interest and self-motivation by the educator to repurpose materials. Educators often say that they are very busy and do not have enough time available to learn about the OpenLearn tools and resources, and to invest in creating new materials or modifying existing ones.

One issue that the tutors brought into evidence was that most students at ACE did not have a webcam or microphones and some of them did not even have a computer with internet access. So this would be a reason why their work with the students in relation to the Compendium and FM would perhaps have to be delayed or would not happen. Overall, they were very positive about OpenLearn and this first experience with users provided feedback that proved valuable throughout the life time of the project in its funded period.

Repurposing materials in OpenLearn

Repurposing of materials is inhibited by technology literacy and the lack of familiarity with the concept.



In relation to repurposing, initially it was thought:

1. that it was not anyone's current role to remix and reuse;
2. the content provided on the site was of high quality and so discouraged alteration;
3. there were few examples showing the method and value of remixing;
4. the use of unfamiliar formats (such as XML) meant that users were uncertain how to proceed.

User reaction to this opportunity was interest but it was also seen as 'difficult', 'scary' and 'challenging'. At a materials-repurposing event carried out with tutors from the Sussex Learning Network, the following quotes represent some of the participants' mixed feelings:

'It would be great to have tips on how to edit: where to stop writing and insert an image, for example. Everything customised on the editing page.'

'Ideally we should be able to have someone to "review" what we wrote in OpenLearn. This provides more confidence on the work and on the design.'

'Before people would not be allowed to make content available. Also, before things were behind firewalls. It is great that OpenLearn bypasses any institutional barriers.'

'How to edit? I think it's scary! I haven't got a clue what it is about.'

'Creation of material can be daunting. Some people feel reluctant to put stuff up without someone checking.'

The repurposing of materials in OpenLearn that has happened often is a product of collaborations. Individual users do not feel comfortable enough to repurpose the materials, as they tend not to be confident to make changes in something that has not been initially written by them – it is a type of 'respect for the content written by somebody else'. In fact, many educators are not used to the concept of repurposing materials, especially when they are written at a high standard and ready to use, as it is in the case of the content provided by the OU. This shows that the idea of repurposing is still a matter of acculturation. It involves understanding of the OER movement and the types of license that can be applied to the open content, in the case of OpenLearn the Creative Commons license.

These initial reactions were addressed in various ways:

1. by reviewing the concept of reuse to allow reuse offsite through syndication;
2. building up a range of illustrative examples;
3. running a competition encouraging reuse;
4. developing alternative formats and toolsets;
5. building partnerships for further work.

There are now evidence of success for reuse both under the original model of individual download and re-editing, leaking of content to other ways to host and present material, use of direct editing on site and work in partnership.

There is also the technological barrier. Initially in OpenLearn users could only make units available by downloading them from the website, making the necessary changes, and uploading the unit again, but in the XML format. OpenLearn would only accept reused content in the XML format because this would enable the unit to be available in a variety of formats to the end user, such as OU XML package, IMS Content Package and IMS Common Cartridge. This would enable the interoperability of systems and the easy travelling of the content systems that support such packages.

However, what had been noticed was that the majority of users were not familiar with XML and did not have the time to learn how to use it so that they could upload units onto the website. This meant therefore that most users did not return content to OpenLearn, and the users who did so were either a scarce XML literate user or higher education institutions that were collaborating with OpenLearn and had specific staff to convert the repurposed materials into XML.

Having recognised the need for a more user-friendly way of repurposing materials, the OpenLearn technical team has developed the *in-situ* editing tool, which was launched in July 2008 and appears as 'Make a Copy for Revising' in the LabSpace. This allows users to make changes in the units directly onto Moodle, and to and have them published immediately. However, some knowledge of how to use Moodle is necessary, and detailed guidelines are provided in the website.

Learning from OpenLearn: summary

OpenLearn has provided a unique opportunity to carry out a major project, study its impact and reflect on the process. Without doubt OpenLearn has had a major impact on the Open University but also on individual learners and educators that have no direct connection with the University. We cannot know all the stories or measure the effect that we have had on all our visitors or even those who come across the content in other environments, perhaps mediated by other providers. It has been a challenge to distil out findings where we have evidence but also to present those things that we need to be more tentative about – things that we know from having carried out this work but which might depend on our particular experience and so not be repeated for everyone.

Revisiting the findings

Institution The institution has gained by contributing to open educational resources. These gains can sometimes be measured: student recruitment; new partnerships; and, new projects. More often they are less tangible but clearly exist: opportunity to experiment; development of staff; low level collaborations; and, enhanced reputation. Involvement in open education also gives a good feeling of being part of an international community.

Methods Mixed methods were needed to help us understand OpenLearn. Action research and activity theory helped to provide a foundation and the tools of open learning proved to be helpful for open research in gathering remote data and presenting the results. Working with users that do not always have enough time or engagement to tell us about their actions or motivations means that we need to draw conclusions based on partial data. We know that there will be interesting and valuable cases of people working with OpenLearn about which we know nothing. Building up a research community to share the different levels of evidence and methods for capturing design, selection, use and evaluation of open resources is an important next step.

Content It has proved surprisingly hard to convince people that OpenLearn material is free, and that it can be reused. The design of the site in two parts may have helped initially in allowing different messages to be targeted at different groups, however users can come in from different directions and at different levels and so there is now an argument for avoiding dividing the audience and instead provide a single site with greater signposting in the materials. The design of the content has shown that distance learning content makes a good basis for open education even with minor changes, however there are opportunities to take advantage of online access to build up use in the online open context. For the future OpenLearn also provides a good source of sharable learning designs together with their instantiations.

Users We can see that we get users of different types, it is useful to think of these as bounce visitors, volunteer students and social learners. As with any other internet site we get a large number of brief visits – adding easy ways for them to take away material, especially as complete units that could be printed gives quicker value to these brief users. Of those who spend significant time on the site, the majority fit the pattern of a volunteer student – despite not having formally signed up as a student they are motivated by assessment, will work through tasks and would like to have their activity recognised. A distinct segment, though, are motivated by social learning – they want to explore tools, connect with other people and construct their own interpretations. OpenLearn offers facilities for each of these groups and helps to address the opportunities of Web 2.0 and personalised learning environments.

Collaboration and reuse OpenLearn has provided the foundation for a range of collaborations that can take advantage of the open nature of the site. The ability to work together informally is appreciated as are the availability of content and tools for free. A cycle can be seen in how collaborations happen. Collaborations have enabled reuse and new contributions of content by getting past the need for working with open resources to be in someone's role. There are now examples of reuse emerging as barriers to understanding the process and technology are addressed.

Time OpenLearn was funded as an initiative for two-years with ambitioius targets and hopes. It has met those targets but some of the hopes for a wider community have been slow to happen. An observation across much of our research is that working in a new area takes time: time for groups to form; time for collaborations to work; time to understand technology; and, time for external factors to catch up. OpenLearn has now been adopted by The Open Univeristy for further funding as an institution, with the intention to bring open education approaches into its main processes. Open education has also been accepted as an important process reflected across the world in the growing membership of the OpenCourseWare consortium and in the UK by major government initiatives to encourage universities to provide free access to their content.

Further resources and references

This report provides only a summary of the reports and work of OpenLearn. A compendium e-Book of these can be found at: http://openlearn-ebook.open.ac.uk/

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ISBN 9780749229252