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Open Learning Network: the evidence of OER impact

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Abstract

Much of the initial work on Open Educational Resources (OER) has inevitably concentrated on how to produce the resources themselves and to establish the idea in the community. It is now eight years since the term OER was first used and more than ten years since the concept of open content was described and a greater focus is now emerging on the way in which OER can influence policy and change the way in which educational systems help people learn. The Open University UK and Carnegie Mellon University are working in partnership on the OLnet (Open Learning Network), funded by The William and Flora Hewlett Foundation with the aims to search out the evidence for use and reuse of OER and to establish a network for information sharing about research in the field. This means both gathering evidence and developing approaches for how to research and understand ways to learn in a more open world, particularly linked to OER, but also looking at other influences.

Keywords

OER, Research, Policy, Collective intelligence

Introduction

There are some significant problems in education. In the United States there is great concern about the College system and how so many students fail to complete. In the UK cost concerns are reversing plans for the expansion of Higher Education. While in Africa the lack of teachers means that it is impossible to meet the demand for learning and achieve Millennium goals to provide schooling for all (Wolfenden, 2008). Across these and a diverse range of other problems, Open Educational Resources have the potential to make a difference. They point the way to a future direction for education and learning systems with sharing and access at the core: so that learners can bridge the gaps that occur in their own education and open sharing allows teaching to operate at scale. However, if this indeed is a possible future, we need to understand and

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demonstrate the value of open approaches built on the freeing up content. For OLnet the challenge to meet this need is reflected in its key research question, stated in the original proposal (<http://olnet.org/node/476>) as:

How can we build a robust evidence base to support and enhance the design, evaluation and use of OER?

And then refined into three sub-issues:

1. How can we improve the process of OER reuse/design, delivery, evaluation and data analysis?
2. How can we make the associated design processes and products more easily shared?
3. How can we build a socio-technical infrastructure to serve as a collective evolving intelligence for the community?

OLnet has worked on these aspects over its first year through a process of targeted research projects (for example in design (Dimitriadis, McAndrew, Conole and Makriyannis, 2009) and participatory learning (McAndrew, Scanlon and Clow, 2010), fellowships, and building a collective intelligence infrastructure (Buckingham Shum, 2009). This has led to a position where we have a range of evidence and views that are influencing our thinking together with observations of a changing landscape for OER. Those changes also provide an impetus to finding the messages that are needed for the area to progress.

In the next sections we look at the overall landscape of activity in OER, consider some of the work that we have carried out so far, and bring out refined goals for OLnet that reflect the way the sector has changed as well as the project. The original research questions remain to help shape our work but are now being revised to focus on the priorities that will help the OER sector.

The OER project landscape

A key driver for the identification of Open Educational Resources as an identifiable area of work has been the funding of a specific action on OER with the Educational Programme of the William and Flora Hewlett Foundation. One way to understand the field is to look at the data that is available from those projects that have received funding within the programme. A specific action that OLnet is carrying out, starting in September 2010, is to review the reported findings across the more than 100 projects that have formed this programme. While it is too early to draw out firm conclusions this data is helping us to understand the profile and direction of activity that the funding has given.

In Figure 1 the main themes of activity associated with more than \$70m of funding from 2001 to 2010 has been assessed from the activity and progress each project has reported (note: this is draft data that is not yet checked or validated). As might be expected the area with the greatest funding is related to the production of OER (either to initiate production or to sustain it through ongoing support), however there has been a change in attitude over time so that considering the same data divided into those projects funded before and since 2008 the picture changes. Less than 2% of funding before 2008 was directed at take up activities, such as awareness, training, use or OER and sustainability. Since 2008 such take up activity increases to over 15% with content based

activities such as production and ongoing support dropping from nearly 60% to under 45% (based on preliminary data from analysis).

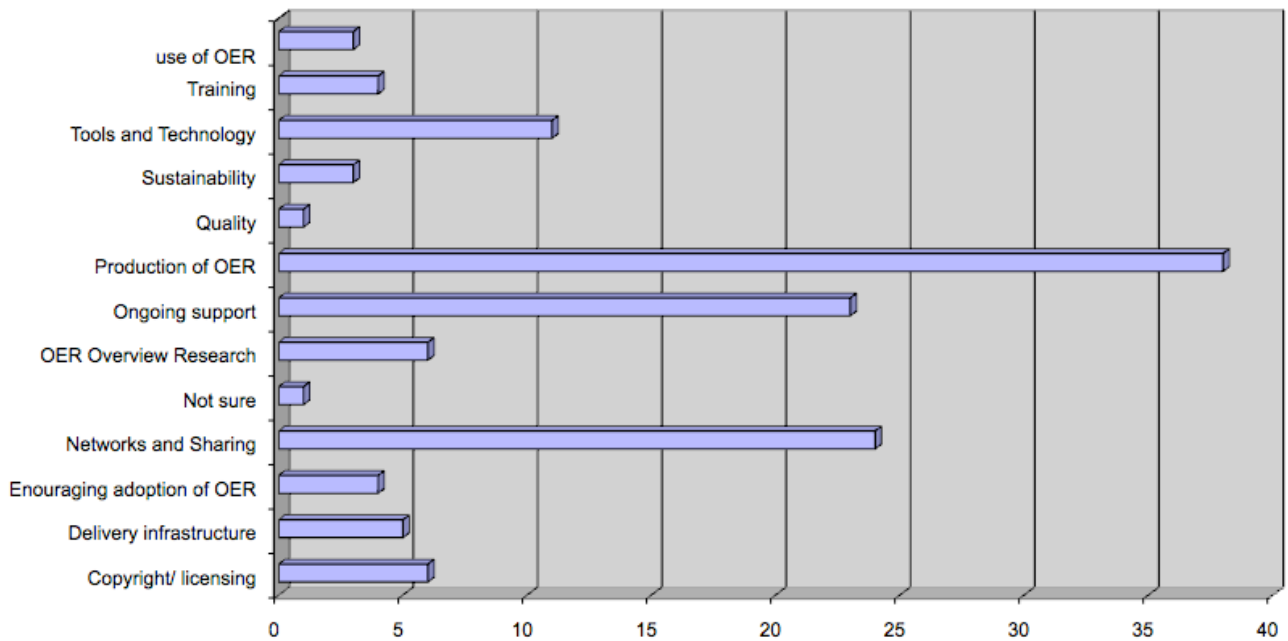


Figure 1: Funding of OER projects (m\$) 2001-2010

The nature of recent initiatives reflects this change. In the UK the JISC/HEA programme UKOER encouraged reuse and remixing rather than the development of new content for release, while the extended focus of the Hewlett Foundation's Education Programme considers the range of skills and expectations on learners require a "deeper learning" (<http://www.hewlett.org/programs/education-program/deeper-learning>) approach that positions OER as a key contributor to the changes needed for the conditions for deeper learning to be met. The Foundation is also a contributor to a collective action to identify the basis for "Next Generation Learning" (<http://nextgenlearning.com/>) These actions go beyond seeing OER as an approach that applies in isolation and positions them as changing the way that schools and education systems can operate. This clearly extends the expectations of the impact that can be achieved by the adoption of open licences with an underlying assumption that openness has the potential to break down otherwise rigid divisions between different parts of the educational operation. A boundary view of the education system sees the different state and country rules, demands of schools systems and universities, academic credit and accreditation, publishers and authors.

Many people have identified the contradictions and tensions in the current system but the solution is not clear. There may also be lessons from initiatives outside education about the difficulties of operating in local or regional manner in order to achieve difficult targets (Brown and Fisher, 2007). In the education section working locally has sometimes led to isolated examples of excellence but the cross over to other situations is inhibited by barriers of agreement and practice, and financial implications that are hard to judge. In a recent paper Wiley (2010) presents the case that openness offers an essential part of the future of education and that "the more open we are, the better education will be".

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Openness, as demonstrated in OER, works in those areas where it is more efficient to remove the barrier of cost and restricted practice. If content and methods are willingly made available then the rationale for protecting and limiting choice changes.

The vision for OER as described above is ambitious, but the steps that need to be taken are practical and pragmatic. No grand agreement is required to adopt a more open approach to content, rather as a producer it is relatively simple to select an open licence (typically Creative Commons) and to accept that the commercial opportunity and value is not harmed by allowing free release. Similarly, as a consumer of resources the choice is to use those sources that have least restrictions. This should be a relatively straightforward position to take, but is partly inhibited by the limited range and uncertain quality of content released as OER. The inhibiting factor of choice is changing rapidly as the influence of the early adopters of Creative Commons and other public licences is reflected in the use of the licences in more mainstream services. Key examples are the use of Creative Commons based licences on services such as Flickr, Picasa, Jamendo and Soundcloud, together with the formal adoption of Creative Commons by Wikipedia in 2009. Concerns about quality are also changing as a model of use of open or free materials is becoming more accepted, one perspective is reflected in the work of the Open Educational Quality Initiative (OPAL) (<http://oer-quality.org/>) which rather than considering the quality in terms of Open Educational Resources takes a position that establishing quality and approaches to Open Education Practices is a more suitable approach.

Research approach: collective intelligence

One aspect of working in Open Educational Resources is the impact of the openness on ways of working. By releasing content with permission for others to change and reuse, or for anyone to access without the barrier of registration, the ways to gather controlled information are reduced. This means that the results from research into the open world may be tentative and often based on partial data. This has led to relatively slow publication, although recently several journals have recognised the interest in Open Educational Resources (for example JIME, Open Learning and EDUCAUSE Review have all produced special issues with OER as a focus). However, the experience gained by the practitioners means that it is important to adopt an approach that recognises the contribution that observations and opinions can make and encourage more rapid reflection. OLnet has taken a model of collective intelligence (Buckingham Shum, 2009) supported by tools to allow ideas to be put forward and then challenged or supported, rather than necessarily proved or assessed. A combination of blogs, questions, ideas and spaces for discussion (such as Cloudworks (Conole and Culver, 2009)) operate along with more conventional conferences and publication of papers to encourage sharing of ideas. Further tools that facilitate the argument process are under development and offer the potential to help both the OLnet researcher and other interested people weigh up the evidence.

In figure 2 the overall concept of collective intelligence is shown with various candidate technologies that can help the approach. Figure 3 shows the result of using one tool, Cohere, to data gathered online reflecting concerns and issues from an expert gathering (the Hewlett Grantee meeting in 2009)

(<http://cloudworks.ac.uk/cloudscape/view/873>). Cohere offers a space for annotating, organizing and connecting resources and reflect collaboratively on the understanding of such resources. But once those resources and annotations become large in number and more complex it can be difficult to make sense of them. To tackle this issue, Cohere provides filtering based on semantic connections between different elements. The filtering and the way in which each user can interact with the data helps to reduce cognitive overload in processing complex graphs and support them in focusing and making sense of specific issues. In the case illustrated in the figure, it helps bring out the potential research themes from statements and to collate them.

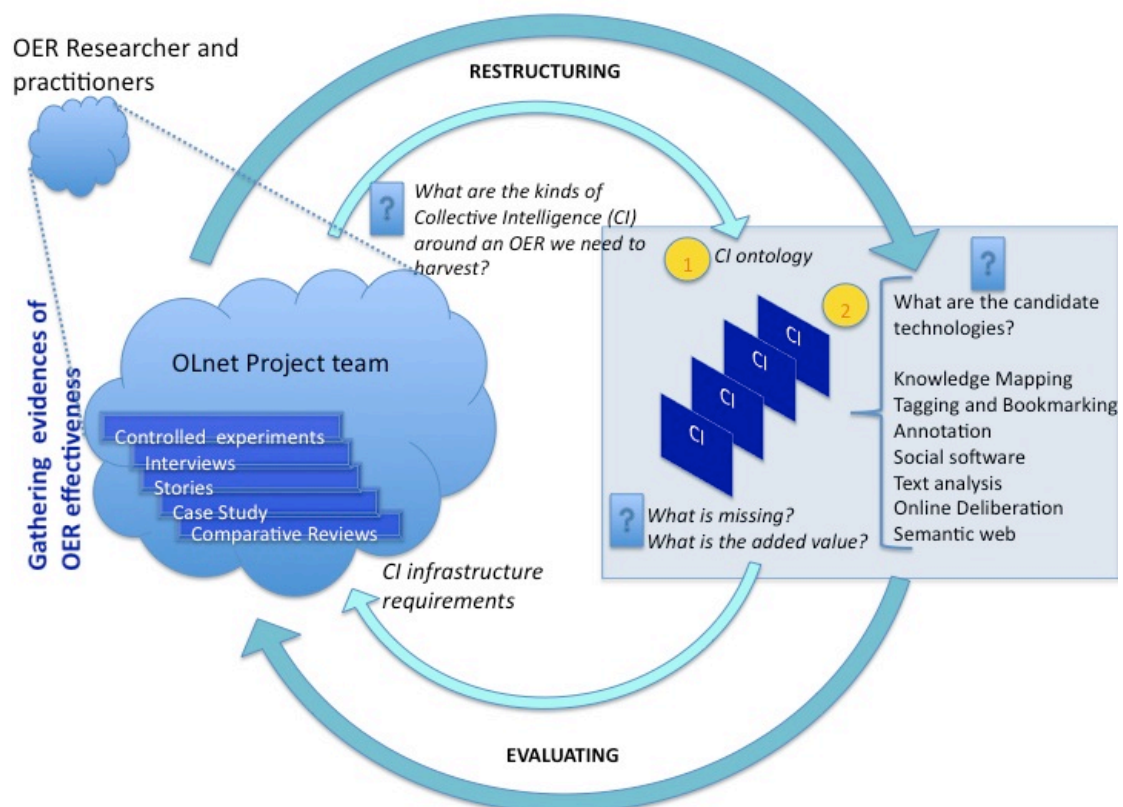


Figure 2: The collective intelligence approach (<http://olnet.org/collective-intelligence>)

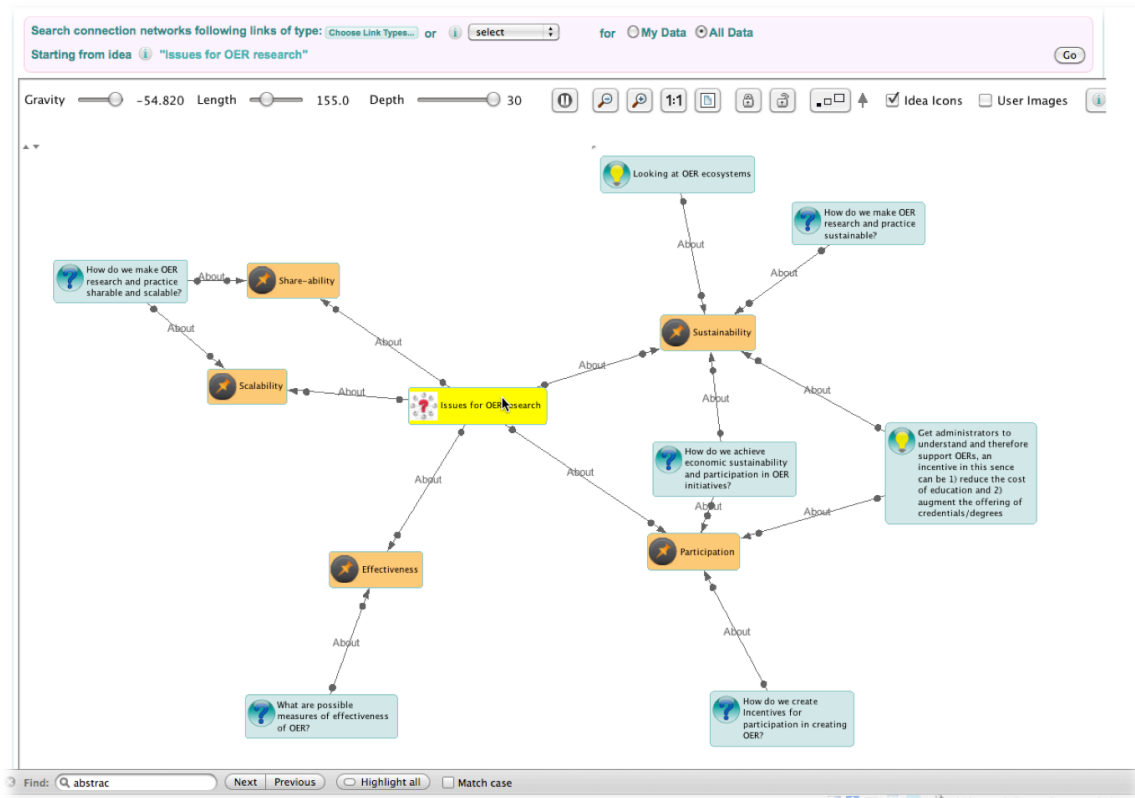


Figure 3: Illustrative use of Cohere to analyse issues

OLnet initial research

In its proposal OLnet set out areas of work and research but also expanded these into themes as work developed and links were established with companion projects. In the first year (March 2009-Feb 2010) OLnet focused on four areas:

- Establishing the programme of work
- Addressing research issues
- Developing the technology to support collective intelligence.
- Initiating the fellowship programme

The themes for research have included methodologies, design, operation of OER sites, participatory learning, cultural impact, and evaluation. Examples of progress across these strands and key contributors supported by OLnet as researchers include:

- Reviewing the way in which social sites are organised by observing the trajectories of those who use the sites (Elpida Makriyannis)
- Interviewing innovators in open access to see how those who perceive themselves as educators and those who don't are helping users support their learning (Giota Alevizou)
- Comparing the willingness to take up and use OER in different sectors of education and in different parts of the world (Tina Wilson)
- Examining the motivation of learners to use open educational resources comparing the social motivations with the educational ones (Kasia Kozinska)

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- Understanding the way that openness can help establish collaboration and allow input from different cultural and linguistic perspectives (Andreia Santos)
- Developing and applying the collective intelligence infrastructure with trials on understanding climate change and the review of research questions for OER (Anna de Liddo and Michelle Bachler)

The fellowships have enabled further research activity in collaboration, including:

- Developing understanding of community models and frameworks for participation (Jenny Preece)
- Examining the different cultural and practical needs in different sectors including the infrastructure base in Africa (Pauline Ngimwa) and the potential barriers and enablers to use of OER in Turkey (Engin Kursun) and Russia (Svetlana Knyazeva)
- Considering the ways in which open content can be designed and the alternative approach of designing patterns of activity that can be supported by different sorts of open resources (Yannis Dimitriadis)
- Developing tools to help track content as it moves between different servers (Scott Leslie) and to incorporate greater interoperability into tools for collective intelligence (Chuck Severance)

Fuller details of some of these activities are presented in further papers at OpenED 2010 (<http://openedconference.org/2010/program>) and on the OLnet website (<http://olnet.org>).

Some of this research also raises ethical and practical issues. For example, in looking at the social aspects of participatory learning the researcher categorised over 3,000 sites, reviewed their structure and content, and then studied user journeys on the sites. Such research draws on public information but the providers of that information may have had no expectation that it might be analysed or linked to models of behaviour. The ethical and pragmatic view is that such research activity is appropriate because no harm can be foreseen. The next stage in open research is to make the data as well as the conclusions public, and we are taking steps to build this practice into OLnet by providing less formal reports as we progress and by organising data in tools for others to access.

Priorities and directions

While OLnet will continue to meet its overall aim to gather evidence and share it with the community, the areas that give it direction and help set the priority for work has been reviewed and six goals brought out. The goals are determined from perceived needs of the sector so are not limited to actions within OLnet alone. It is also important that in setting out to meet these goals we retain a critical stance, and indeed some of the evidence that we have so far can be seen to offer support for a view, or to provide some contradiction with the view. As an example of this in goal 4 below we state a headline lesson that the model of learning is becoming more social. However behind that is data that supports this view: an increase in use of social tools and the blurring of ideas for self-improvement and for learning are becoming more blurred (emerging from observational work and interviews with key stakeholders), but also questions

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this view: the dominance of copyright as a concern and the primary focus on working with content on some OER sites (indicated by data from surveys and research on users of OER sites)

It is important to be aware that simple messages often have more complex stories behind them. However it is also important to communicate understandable goals and lessons. The six goals and brief lessons that were distilled from OLnet's initial work are:

1. Goal: Find evidence to support OER policy
Lesson: There has been a change in emphasis from "OER as an end in itself" to "OER as a means to an end" to support changes in educational systems.
2. Goal: Provide design support for OER
Lesson: Opening up resources also means that there are accessible open designs, and content that can be reshaped to fit alternative designs
3. Goal: Build an infrastructure that works - demonstrating uses of existing tools and developing new ones
Lesson: OER are becoming integrated with other "free" resources, the tools that support this mixing are still to mature.
4. Goal: Show how free resources work for learning
Lesson: The motivation for learning separates out and is no longer necessarily driven by accreditations but by more social routes to participation
5. Goal: Provide access to the lessons of content
Lesson: There are several different models for the way that learners engage with content.

Taking this work forward the structure of OLnet, based on research areas and international fellowships, gives a good opportunity to develop greater understanding of the contexts in which OER need to happen and the lessons to take from those context. This gives a sixth and perhaps in structural terms most important aspect to work on OER in understanding the many different contexts in which learning can occur.

6. Goal: Understand what transfers across context
Lesson: The openness in OER can help break down the barriers between cultural and educational contexts.

Conclusions

Open Educational Resources provide one of the few practical examples of how formal educational systems change in approach with potential for impact on policy and practice. At the same time practical steps can be taken at different levels to implement that change from individual learners through teachers and institutions to national systems. The OER movement should be proud of its pioneering work but view OER beyond an end in itself.

Through the support of the William and Flora Hewlett Foundation OLnet has been able to achieve many positive outcomes through its role in conferences, fellowships and research findings as well as exploring open methods. Challenges

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remain and eventual success will depend on impact through the work of others and in how we can truly assist the collective work of the recognised and hidden communities of those working to develop a forward looking and open approach to education.

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Biographies

Patrick McAndrew is Senior Lecturer in The Open University's Institute of Educational Technology (IET). He has led a range of research projects addressing how materials and environments can support learning through the use of learning design and the provision of tools for learners. Patrick has a degree in Mathematics from the University of Oxford and a PhD in Computer Science from Heriot-Watt University in Edinburgh. He is Director of the Hewlett-funded OLnet initiative and Associate Director of Learning & Teaching in IET. Previously he was the Research and Evaluation Director of OpenLearn, a major initiative to

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provide open content for free education supported by The William and Flora Hewlett Foundation.

Karen Cropper has been Project and Liaison Manager on the OLnet project since September 2009 and working for The Open University since December 2007. Originally trained as an engineer in Newcastle, her first job was as research engineer for Rolls Royce. She completed an MSc by research at UMIST whilst on a two year contract as a research assistant funded by a division of the Mars (GB) group. Karen worked in Local Government for 9 years, including posts in waste management, highways and public transport. She then developed an independent position in the Voluntary sector supporting fundraising and strategic planning, as well database and web design. Key achievements include raising £750,000 for a building and then project managing its construction. As Project and Liaison Manager Karen has oversight of OLnet and associated projects at The Open University and leads its Fellowship programme.