OER Impact: Collaboration, Evidence, Synthesis

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Abstract

The OER Research Hub (OERRH) project works collaboratively with open education initiatives around the world to examine the impact of open educational resources. In this paper I will outline methods for organizing and disseminating open research into OER. In particular, I focus on the value of curation when combined with strategies for the visual presentation of evidence (especially mapping). The discussion is framed by a presentation of the OER Impact Map, an asset of OERRH.

Keywords

OER, Research, Evidence, Impact, Methodology, Mapping, Curation, Collaboration, Synthesis

OER Research Hub: Collaborative Research into OER Impact

OER Research Hub (OERRH, 2014) is a research project at The Open University (UK). The project is funded by The William and Flora Hewlett Foundation to investigate the evidence case for a range of hypotheses about the difference OER is making in education worldwide.

There is a widely recognized need for a shared evidence base for OER impact which can support effective evidence-based decision making and OER advocacy. OER Research Hub works with a wide range of organizations across schools, colleges, HE and informal learning to produce this evidence base. Some of our main collaborations include:

- The *Bridge to Success* project; a case study in adaptation of open learning materials to support marginalized students entering community colleges (Pitt et al., 2013)
- *Community College Consortium for OER*; a consortium of more than 200 colleges promoting awareness and adoption of OER (CCCOER, 2014)
- *Flipped Learning Network*; a non-profit organization that aims to bring together practitioners of 'flipped learning' (Hamdan et al., 2013)
- *Open Course Library*; a collection of low or no-cost materials for high-enrolment college courses (Caswell, 2012)
- *OpenLearn*; a platform hosting more than 600 units of open course content at The Open University (Law, Perryman & Law, 2013)
- *OpenStax College*; a non-profit organization that publishes free textbooks developed and peer-reviewed by educators (OpenStax, 2014)
- *P2PU* is an online non-profit open learning community which uses badges for assessment (Ahn et al., 2013)
- *Saylor Foundation* provides open, peer-reviewed content for high-enrolment majors in the USA (Saylor, 2014)
- *Siyavula*; providers of openly-licensed science and mathematics textbooks in South Africa who are developing a complete K12 curriculum (Siyavula, 2014)

- *TESS-India*; a project focused on participatory learning in schools across India (TESS-India, 2014)
- *Vital Signs*; a field-based science education programme for schoolchildren based on open data and open technologies (Vital Signs, 2014).

In addition to these primary collaborations, there are also many smaller 'boutique' collaborations and instances of where we find evidence in published literature which we incorporate into the overall evidence base. The diversity of the collaborations means that the project has generated lots of different types of data at various levels of granularity. There is, therefore, a need for a process of arbitration and dissemination which can support and communicate judgments made about the evidence base back to the OER community.

Curating Data in Collaboration

McAndrew & Farrow (2013) have described a set of open research methodologies which reflect the particularities of doing open research into OER. Outputs from the different research activities are assigned to different stakeholder groups at different institutions across different sectors. OERRH takes a collaborative, mixed approach to research which is both experimental and non-experimental and produces a range of research data in different formats and at different levels of granularity. Research questions are investigated across OERRH collaborations through a range of qualitative and quantitative research methods (examples include surveys; structured interviews; focus groups; statistical analysis of student performance; and policy analysis).

The primary focus for the research comprise two overarching 'key' research hypotheses which are held to apply in all research collaborations:

- A. OER improve student performance/satisfaction
- B. People use OER differently from other online materials

In addition specific collaborations target one or more of the derived testable hypotheses:

- C. OER widen participation in education
- D. OER can help at-risk learners to finish their studies
- E. OER use leads educators to reflect on their practice
- F. OER adoption brings financial benefits for students/institutions
- G. Informal learners use a variety of indicators
- H. Informal learners develop their own forms of study support
- I. Open education acts as a bridge to formal education
- J. OER use encourages institutions to change their policies
- K. Informal assessments motivate learners using OER

The hypotheses act as both a filter for the relevance of data as well as a way of aggregating disparate evidence that can be aligned to a particular claim. While of course there are reasons for respecting the differences between different countries and sectors, the claim to be able to draw direct comparisons is supported by the consistency of the hypotheses across projects and sectors.

Cartographic Organisation of Research Evidence

Mapping has emerged as a key tool for building collective understanding of the world of OER. The UNESCO mapping initiative began with a period of collaboration between the Athabasca University OER mapping project and the OLnet project (OLnet 2012a) at The Open University, (a partner institution of the UNESCO Chairs in OER). The Athabasca Learning Chair in OER was created to promote institutional, national and regional adoption of OER. Over three weeks almost 900 members of the Athabasca OER community discussed and reflected on the potential use of an OER map (D'Antoni, 2012). This led to a wider period of consultation which gave rise to a simple metadata structure which was refined for the purpose of mapping evidence. While the description was never used to implement a full mapping service the approach has remained in the consciousness of the OER movement and there remain a recognized need for an OER map.

Similarly, the OLnet 'evidence hub' (OLnet, 2012b) was envisioned as a tool to disseminate project work while linking key aspects to wider discussions and events that were taking place (De Liddo et al, 2012). The designers of the OLnet Evidence Hub used the concept of 'contested collective intelligence' (De Liddo & Buckingham-Shum 2010). This approach recognises that most 'knowledge' is contested, and ameliorated by different backgrounds, cultural assumptions and intellectual traditions. The site was designed to augment everyday communication mechanisms by crystalizing existing discourse and arranging it in ways which allow collective intelligence to filter claims while preserving the contested nature of knowledge. The site was augmented with a map showing the relative location and density of OER projects.

Lessons from both these initiatives have been applied to a simplified design for information architecture which is supported by the hypothesis-based methodology of the project as a whole. Our approach appeals to elements of both the mapping service (to raise awareness of the global 'picture' and reveal patterns across different sectors) and the attempt to support existing interactions and sensemaking (making explicit key issues and gaps in the evidence base).

OER Impact Map: Technical Description

OER Impact Map (2014) is a custom Wordpress build which has been adapted for easy customization and bespoke post types. We are therefore able to publish information (currently limited to projects, policies and evidence but which could in future include repositories, experts, educators, funders, etc.) that is structured consistently and in ways which help users to search and filter to find the content which is relevant to them. Central to this approach are visual representations of the data which can be an effective support for navigating complex information and seeing underlying patterns of OER impact.

At the top level users can review a world map showing the flow of evidence and where it has been identified on the map (Figure 1). Selecting different countries updates the flow diagram and shows nodes for that country.

Figure 1. World Summary of OER Impact.
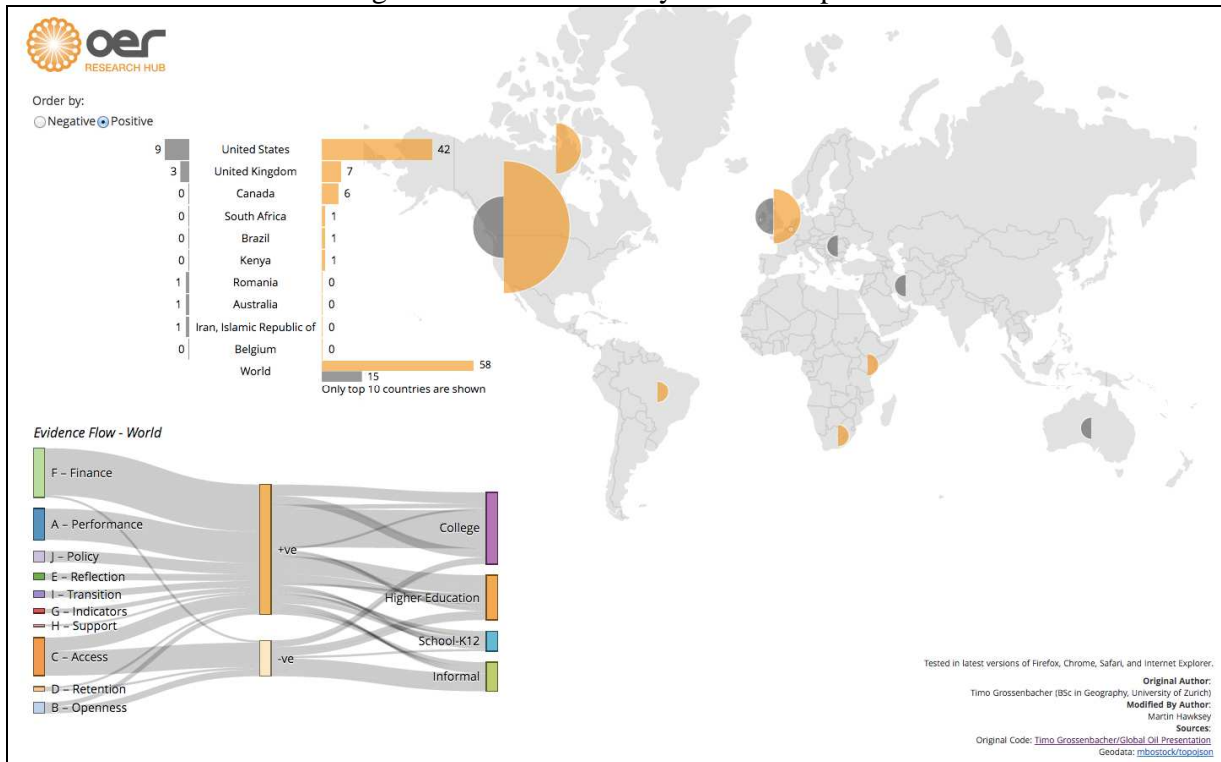
In addition, users can freely explore the data on a second map supported by Open Street Map (2014). This map supports filtering by hypothesis, evidence polarity and sector, meaning that finding evidence relevant to a very specific context becomes possible (Figure 2).

Figure 2. Summary of Positive Evidence (N.America).
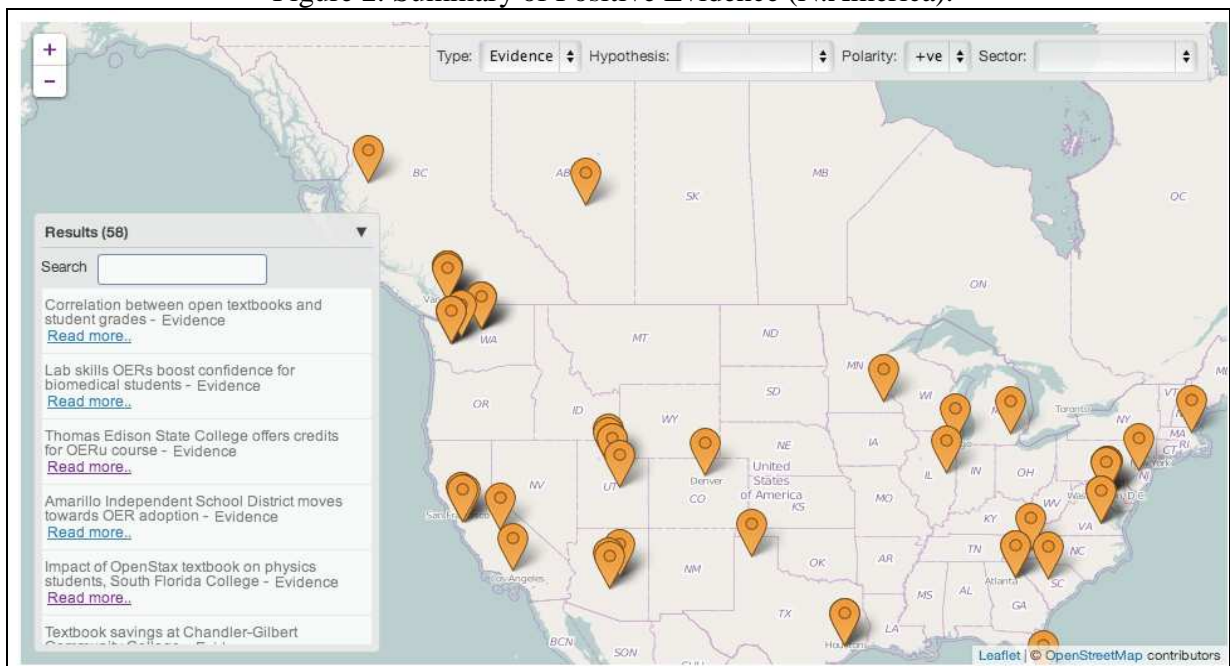
At the most granular level of presentation OER Impact Map uses a custom Wordpress post type for 'evidence', 'project' and 'policy' nodes. Clicking through to a full record brings users through to a full HTML page which can support embedded content from YouTube, SlideShare, etc and cloud storage services like Dropbox or Google. At the highest level the system synthesizes data into a one page summary report for each hypothesis (shown in Figure 3 for Access). This page summarises the balance of evidence for each sector as well as giving the option of further isolating data by clicking on the map or flow diagram.

Figure 3. Hypothesis C Report (Access).

A Javascript bookmarklet is used to support and expedite data curation. We also provide graphic presentation of our bank of (around 7,000) survey results. The site supports Open ID sign-in.

All of the software used is open source and the code for the project is available on an open licence through GitHub (Hawksey, 2013). Similarly, we aspire to release all our research data on a CC-BY licence as well as our research instruments (surveys, interview questions, focus group methods, metrics, etc.). This means that, in principal, anyone could replicate our methodology and generate data which could be added to the evidence base. Native Wordpress functions provide support for more casual community engagement (comments, sharing, etc.) while APIs

provide a further method for both importing and exporting data from other archives and repositories.

Conclusion and Further Work

OER Impact Map represents the fulfillment of openness and community in approach, embracing open data, research instruments and working practices to show the collective benefits of openness. The live site already contains dozens of pieces of evidence with a programme of data seeding scheduled for the remainder of the project (until February 2015).

Although OER Impact Map has been created as a tool for a research project it has been developed with the needs of the OER community in mind. We welcome input from the OCWC community in populating the map. Anyone who wants to add their project/policy or contribute evidence should begin by visiting http://chaos.open.ac.uk/submit/ and following the instructions found there. We also welcome more general feedback on the map and the services OER Research Hub provides to the OER community.

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