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RESEARCH HUB

OER Evidence Report 2013-2014

Building Understanding
of Open Education





OER Evidence Report 2013-2014

The Open Educational Resources Research Hub (OER Research Hub) provides a focus for research, designed to give answers to the overall question ‘What is the impact of OER on learning and teaching practices?’ and identify the particular influence of openness. We do this by working in collaboration with projects across four education sectors (K12, college, higher education and informal) extending a network of research with shared methods and shared results.

The project combines:

- Targeted research collaboration with high profile OER projects
- A programme of international fellowship
- Global networking and expertise in OER implementation and evaluation
- A hub for research data and excellence in practice

This report is an interim review of evidence recorded against the key hypotheses that focus the research of the OER Research Hub project.

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Introduction

The second year of the OER Research Hub project has seen collaboration with 15 projects, the development of the OER Impact Map, and 20 surveys conducted producing more than 6,000 responses about the impact of open educational resources (OER). This document sets out the findings against the eleven hypotheses under investigation in the OER Research Hub project.

The picture of OER impact is encouraging, but also mixed. The two main hypotheses under investigation were (A) that OER improves student performance; and (B) that openly licenced material is used differently to other online material. With the first of these we can say that the implementation of OER can improve student performance, but it is often indirectly through increased confidence, satisfaction and enthusiasm for the subject. With the hypothesis on openness, we see that adapting resources is important to all types of users. David Wiley has talked of 'dark reuse' in that reuse is rarely observable. We found that reuse does occur on a wide scale, but it should be viewed as a continuum of adaptation, from finding inspiration to a full 'reversioning' of content. Openness has been shown to be a key factor in facilitating this.

Other interesting findings include the extent to which OER use causes reflection by educators on their own practice. This came across more strongly than anticipated and should be promoted more widely as a benefit of OER. Similarly, there is currently not enough emphasis given to the use of OER by formal students. Students are using OER to trial subjects prior to engaging in formal study and then supplementing their formal education with a wide range of OER.

There is also evidence for the 'viral' effects of openness in that exposure to OER tends to cause users to seek it elsewhere. Most OER users reported being very satisfied and would continue to use and recommend open resources. Many educators were keen to encourage colleagues to use OER and to make more of their practice open. This would suggest that finding ways to implement OER and make them easy to use will have long term benefits for open education in general, if the open aspect is foregrounded.


Awareness of OER and Creative Commons is growing, but OER repositories remain relatively unused and unknown compared with the main three educational resource sites of YouTube, Khan Academy and TED. This suggests that brand awareness of OER and easy location is a major obstacle to overcome for the next generation of OER projects.

¹Wiley, D (2009) "Dark Matter, Dark Reuse, and the Irrational Zeal of a Believer"
<http://opencontent.org/blog/archives/905>



Summary of Key Findings

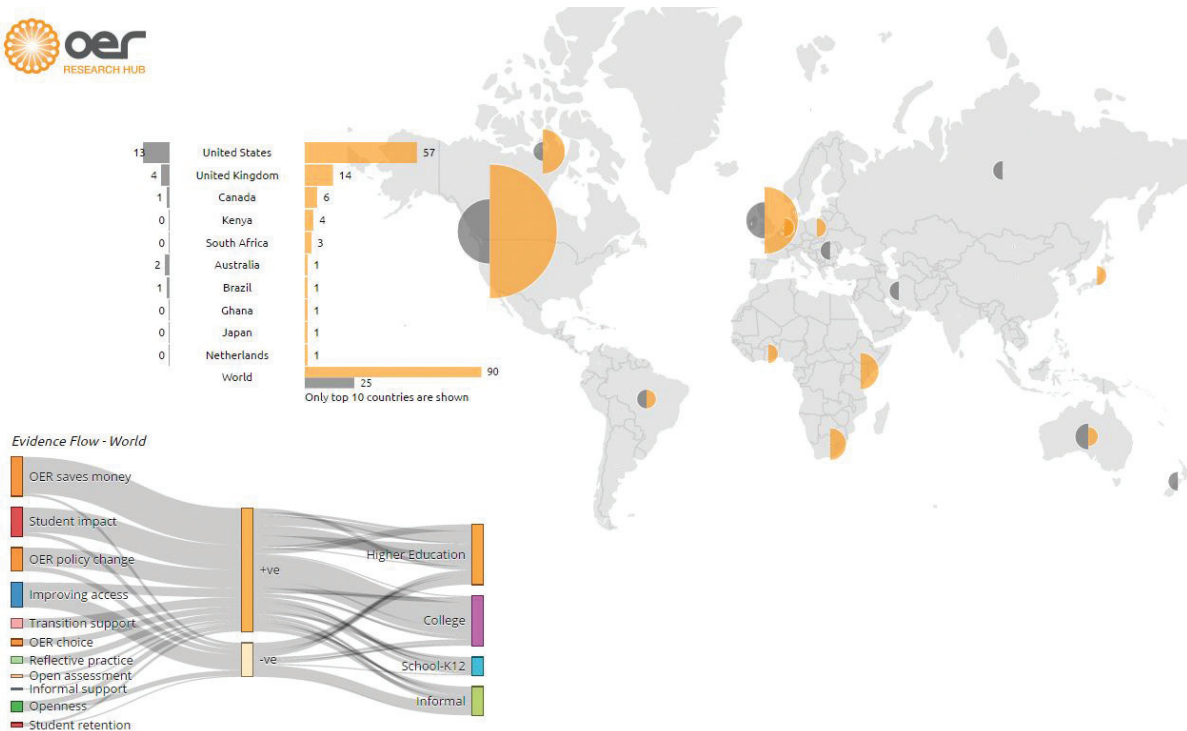
Some other key findings are as follows:

- 37.6% of educators and 55.7% of formal learners say that using OER improves student satisfaction
 - 27.5% of educators and 31.9% of formal learners agree that OER use results in better test scores
 - 79.4% of OER users adapt resources to fit their needs
 - 79.5% of educators use OER to get new ideas and inspiration
 - 88.4% of learners say that the opportunity to study at no cost influenced their decision to use OER
 - 74.9% of informal learners use OER to have a learning experience
 - Knowing where to find resources is one of the biggest challenges to using OER
 - General knowledge of well-established OER repositories is low
 - Only 5% of educators say they don't share information about OER
 - The more educators use OER, the more they are willing to share
 - Only 12.4% of educators create resources and publish them on a Creative Commons license
 - Videos are the most common type of OER used.
 - Cost of and access to materials can have an effect on student retention
 - 40.9% of all formal learners in our sample consider that OER have a positive impact in helping them complete their course of study
 - 79.6% of formal students think they save money by using OER
 - 31.5% of informal learners say that their interest in using OER is a chance to try university-level content before signing up for a paid-for course
 - 31.3% say their use of OER influenced their decision to register for their current course.
 - 83.2% of informal learners say they are more likely to take another free course or study a free open educational resource, and 24.2% say that they would go on to take a paid for course as a result of using OER
 - Informal learners choose OER that are relevant to their particular needs, have a good description of learning objectives and outcomes, and are easy to download
 - Only 15.5% of informal learners select OER with an open license allowing adaptation despite the fact that 84.7% say they adapt the resources they find to fit their needs
- 

Methodology

Each of the initial eight collaborations had an OER researcher assigned to work with them. Three or more of the eleven hypotheses were also allocated to each collaboration, with hypotheses A (performance) and B (openness) being relevant to all. Different methodologies apply to each collaboration, combining surveys, interviews, focus groups and data analytics. In addition, one fellow from each collaboration has visited the Open University to focus on a specific area of research. For the (seven) additional collaborations that were acquired during the life of the project, the same approach was applied, but the relevant hypotheses were identified in initial liaison (with the result that hypotheses A and B were not always investigated as they were for the initial collaborations). The outputs of research are blogged and also aggregated on the OER Impact Map (<http://oermap.org>).

Figure 1. OER Impact Map (global summary view)



Supplementary to the evidence acquired from these targeted collaborations the project is also gathering the evidence from the OER community and published research. This evidence is gathered as the project progresses and added to OER Impact Map. In addition, the team have adopted an agile methodology adapted from software development. This is focused around week-long 'sprints' which target evidence for a particular hypotheses. One such sprint has focused on populating OER Impact Map from existing research repositories (e.g. OER Knowledge Cloud and MOOC Research Hub) and through regular review of academic journals. It should be noted that evidence continues to be gathered against each of the research hypotheses as it becomes available, and the latest representation of the evidence base will be found in the relevant hypothesis summary of OER Impact Map.




Hypotheses

The 11 hypotheses under investigation (with a simplified shorthand version) are as follows:

- A** - Performance: Use of OER leads to improvement in student performance and satisfaction (OER improve student performance/satisfaction)
- B** - Openness: The Open Aspect of OER creates different usage and adoption patterns than other online resources (People use OER differently from other online materials)
- C** - Access: Open Education models lead to more equitable access to education, serving a broader base of learners than traditional education (OER widen participation in education)
- D** - Retention: Use of OER is an effective method for improving retention for at-risk students (OER can help at-risk learners to finish their studies)
- E** - Reflection: Use of OER leads to critical reflection by educators, with evidence of improvement in their practice (OER use leads educators to reflect on their practice)
- F** - Finance: OER adoption at an institutional level leads to financial benefits for students and/or institutions (OER adoption brings financial benefits for students/institutions)
- G** - Indicators: Informal learners use a variety of indicators when selecting OER (Informal learners use a variety of indicators when selecting OER)
- H** - Support: Informal learners adopt a variety of techniques to compensate for the lack of formal support, which can be supported in open courses (Informal learners develop their own forms of study support)
- I** - Transition: Open education acts as a bridge to formal education, and is complementary, not competitive, with it (Open education acts as a bridge to formal education)
- J** - Policy: Participation in OER pilots and programs leads to policy change at an institutional level (OER use encourages institutions to change their policies)
- K** - Assessment: Informal means of assessment are motivators to learning with OER (Informal assessments motivate learners using OER)

These hypotheses provide the structure for the rest of this report.



Overview of Survey Respondents

The hypothesis review draws on more than the surveys, but these represent the biggest component of data, and so an overall review of the respondents is provided for context.

By role: informal learners (50.3%, n= 3212); formal learners (24.7%, n= 1578); educators (21.6%, n=1382); and librarians (3.4%, n=218).

By gender: Table 1 shows a reasonably even spread of responses across gender, with more male respondents in an educator role (55.6%, n=625) and in formal learning (54.4%, n=845), but a slightly higher percentage of female respondents in informal learning (50.1%, n=1579).

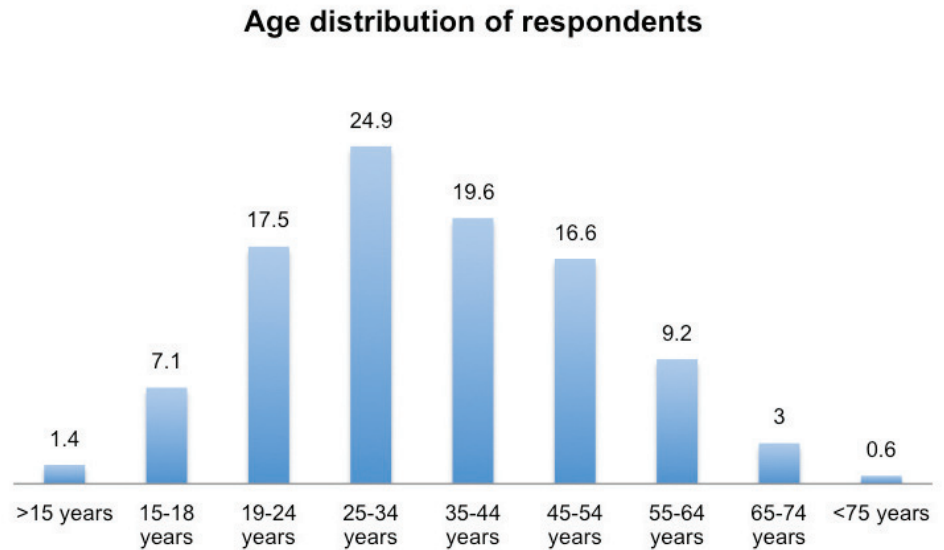
Table 1. Respondents by gender

	EDUCATORS n=1125		FORMAL LEARNERS n=1554		INFORMAL LEARNERS n=3151		ALL RESPONDENTS N=6046	
	Count	%	Count	%	Count	%	Count	%
Male	625	55.6	845	54.4	1524	48.4	3032	50.1
Female	496	44.1	697	44.9	1579	50.1	2947	48.7
Transgender	4	4	12	8	48	1.5	67	1.1

“ Informal learners, 50.3%; formal learners, 24.7%; educators, 21.6%; librarians, 3.4%

By age: Figure 2 shows a normal distribution of all respondents (N=6101) by age, with a majority (24.9%, n=1517) within the ages of 25-34. When analysed by role we see a normal distribution with the educators group having the bulk of respondents within the ages of 25 and 54; the group of formal learners is unexpectedly positively skewed, with the highest percentage of respondents aged between 19 and 24 years old (27.2%, n=427); the group of informal learners is only slightly positively skewed, with a majority of respondents within the ages of 25-34 (26.5%, n=845).

Figure 2. Age distribution of respondents



“ Respondents seem to be highly qualified, with a majority indicating that they hold a postgraduate or undergraduate degree

By country of residence: All responses considered (N=6335), there are 180 different countries whose citizens report using OER, the highest percentages in the United States (35.3%, n=2236), United Kingdom (19.4%, n=1229), India (3.6%, n=226), Canada (3.3%, n=211), South Africa (2.5%, n=160), Australia (2.3%, n=143) and China (2%, n=125). Since the OERRH's main activity and collaborations are based in the US and UK, it is not surprising to find these two countries as contributing the highest number of responses also in the educators', formal learners' and informal learners' groups (see Table 2).

Table 2. Country of residence

	EDUCATORS n=1368		FORMAL LEARNERS n=1567		INFORMAL LEARNERS n=3185	
	Count	%	Count	%	Count	%
USA	562	41.1	466	29.7	1122	35.2
UK	114	8.3	306	19.5	707	22.2

By language: All responses considered (N=6071), a majority of respondents (64%, n= 3886) say that English is their first spoken language. The same can be reported when data are divided by role, with the highest difference between YES and NO answers in the group of informal learners.

By academic qualification: Respondents seem to be highly qualified, with a majority indicating that they hold a postgraduate (33.3%, n=2035) or undergraduate degree (28.5%, n=1738), and a very small percentage declaring that they have no formal qualification (4.4%, n=266). These figures are repeated in the educators' group, but reversed for formal and informal learners, as in both groups there are more respondents with an undergraduate degree than with a postgraduate degree (see Table 3). It is worth noting that the highest percentage of those who don't hold a formal qualification appears amongst formal learners (7.9%, n=122).

9.9% of respondents declare a disability

Table 3. Academic qualification of respondents

	EDUCATORS n=1255		FORMAL LEARNERS n=1536		INFORMAL LEARNERS n=3097		ALL RESPONDENTS N=6104	
	Count	%	Count	%	Count	%	Count	%
School leaving qualification	47	3.7	335	21.8	495	16	878	14.4
Vocational qualification	35	2.8	69	4.5	208	6.7	314	5.1
College diploma or certificate	124	9.9	254	16.5	493	15.9	873	14.3
Undergraduate/Bachelors University degree	299	23.8	425	27.7	991	32	1738	28.5
Postgraduate/Graduate School University degree	734	58.5	331	21.5	782	25.3	2035	33.3
No formal qualification	16	1.3	122	7.9	128	4.1	266	4.4

By disability: 9.9% (n=598) of all respondents declare to have a disability, a percentage that increases only slightly in the group of formal learners (11.1%, n=174), while it decreases in the educators' group (8.5%, n=89) (see Table 4).

Table 4. Do you consider yourself to have a disability?

	EDUCATORS n=1047		FORMAL LEARNERS n=1574		INFORMAL LEARNERS n=3203		ALL RESPONDENTS N=6039	
	Count	%	Count	%	Count	%	Count	%
Yes	89	8.5	174	11.1	317	9.9	598	9.9
No	958	91.5	1400	88.9	2886	90.1	5441	90.1

By employment status: A majority of respondents is in full-time employment (48.4%, n=2884), a situation that is repeated when considering data by role, with the obvious exception of formal learners, where most say they study full-time (39.5%, n=597). It is interesting to note that of those who declare themselves to have a disability (n=583), the highest percentage also declare to be in full-time employment (29.2%, n=170), with 20.1% (n=117) indicating that they are not able to work due to their disability.

By type of teaching: Most educators teach full-time and face-to-face (47.6%, n=395), while most formal learners also study full-time and face-to-face (41.5%, n=604). The second most common type of teaching for educators in this sample is part-time face-to-face teaching (33.4%, n=277); for formal learners, however, it is part-time distance/online learning (30.2%, n=302).

By subject: A majority of educators use OER to teach Science (43.8%, n=392) and Math (23.5%, n=210). Formal learners use OER mostly to study Science (43.4%, n=520) and Psychology and Philosophy (38.7%, n=463). Most informal learners in our sample use OER in Computer and Information Science (31.7%, n=760) and Economics, Business and Management (30.6%, n=732).

By educational context: A majority of educators in our sample teach in K12 (42.5%, n=571). Most formal learners study at higher education level (54.8%, n=381)

By internet access: An overwhelming majority of respondents have broadband access to the internet at home (82.6%, n=5144), regardless of their roles as educators (82.2%, n=1119), formal learners (78.2%, n=1182) or informal learners (84.4%, n=2647).

Hypothesis A

Performance

Use of OER leads to improvement in student performance and satisfaction (OER improve student performance/satisfaction)

“ 37.6% of educators agree or strongly agree that OER increase student satisfaction with the learning experience

Summary

Learners believe that OER use improves the grade performance, educators to a lesser extent. There is stronger evidence for OER improving related factors for learners, such as improved enthusiasm for study, confidence and overall interest.

Impact Map summary: <http://oermap.org/hypothesis/578/hypothesis-a-performance/>

Evidence

This is an overarching hypothesis for the project in that is addressed in all collaborations; it can also be seen as an overarching belief for the OER movement in general. The additional element of satisfaction has been added to performance, as many observers suggested that OER based courses may not lead to improved performance, but that students preferred them due to variety and quality of resources.

On the impact of OER on student satisfaction, 37.6% (n=268) of educators agree or strongly agree that OER increase student satisfaction with the learning experience; a higher percentage of formal students (55.7%, n=370) give their support to this statement. On the subject of performance understood in terms of improved grades, only 27.5% (n=196) of educators believe that OER use results in better test scores for students; again, the percentage increases to 31.9% (n=212) when considering the responses of formal students.

There is stronger belief for OER improving non-grade related aspects of performance, with a majority of educators (36.2%, n=254) agreeing that OER improve student engagement with lesson content and increase students' experimentation with new ways of learning; 35% (n=249) that students are more independent and self-reliant as a result of using OER, and 35.2% (n=256) that students become more interested in the subjects taught. The impact upon learners can be dramatic:

“I went from being horrible in AP Biology to actually reading these and went from a D 66% up to a A 90% so far.”

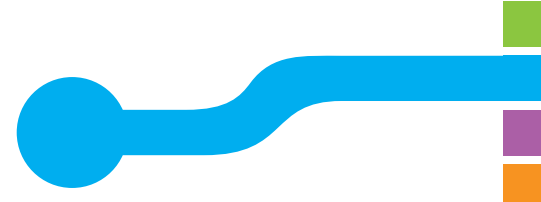
There is strong evidence that OER benefit learners in these aspects, with formal learners, ranking 'increased interest in the subjects taught' as the biggest impact that OER have on their learning (60.1%, n=398), followed by 'increased experimentation with new ways of learning' (49.4%, n=327); and gaining confidence is also significant (48.6%, n=322). Looking at the Saylor example, more than half of these learners believed that they grew more confident, became interested in a wider range of subjects, their learning experiences became more satisfactory and their interest in formal studies increased.

For educators, relevance and quality of OER is significant, as these quotes demonstrate:

“Over the course of an entire semester all the kids turned in on average 82% of their homework, which is significant for me as an instructor because that made me feel that what I was asking them to do at home, whether it was to watch a video I created, or whether it was to read something from the Royal Shakespeare Company, whether it was from iTunes U, whether it was a lecture, whatever it happened to be, that they saw the meaning in doing that. That to me was a time when I was able to use free online resources for the best interests of my students.”

“OER per se does not excite learners. Good content does - free or paid, legal or pirated. Siyavula's stuff works because it is GOOD. Being CC makes it legal to download, not fun to use. There are 100's of free/CC Geogebra resources. 98% are useless to me.”

“The greatest impact comes when I share the MERLOT website with students. They instantly connect with others who share their best practices. Then they develop their own best practices to share with their students and colleagues. There is such a great ripple effect when people are willing to share; especially when the information is easy to locate. I occasionally teach teacher educators online and am often sent an email from my students thanking me for sharing MERLOT.”



“ There is such a great ripple effect when people are willing to share; especially when the information is easy to locate

Hypothesis B

Openness

The Open Aspect of OER creates different usage and adoption patterns than other online resources
(People use OER differently from other online materials)

“ 86.3% of educators adapt OER to suit their needs

Summary

The difference that an open licence makes to free, digital resources is largely around the activity of adaptation. Openness facilitates a range of approaches to adaptation by users. Awareness of Creative Commons and the significance of an open licence is increasing, particularly amongst educators. For those who share and adapt content, this significance is even greater.

Impact Map summary: <http://oermap.org/hypothesis/579/hypothesis-b-openness/>

Evidence

Hypothesis B is intended to guide exploration of whether the openness of open educational resources is a contributory factor to their being used differently from non-open online resources. To what extent does openness (i.e. openly licensed resources) make a difference compared with merely being online and free? Disentangling the influence of these elements is problematic: the contribution of all factors will influence the use of a resource; and isolating the particular influence of openness is difficult.

One indicator of the influence of openness is the degree to which resources are adapted. We find a comparatively high level of adaptation amongst all types of users (79.4%, n=1765), regardless of being educators (86.3%, n=556), formal learners (77.2%, n=336) or informal learners (84.7%, n=788). However, what constitutes adaptation may vary. For some users it means using the resources as inspiration for creating their own material, as this quote illustrates:

“What I do is I look at a lot of free resources but I don’t usually give them directly to my students because I usually don’t like them as much as something I would create, so what I do is I get a lot of ideas.”

While this is an important use of OER (and perhaps under-reported), it arises principally as a result of their online availability rather than open licence. However the freedom to reuse ideas is encouraged with an open licence and users feel free to do so. For other users, adaptation is more direct, editing or ‘reversioning’ the original, aggregating elements from different sources to create a more relevant one, as this quote demonstrates:

“The problem where I teach now is that we have no money; my textbooks, my Science textbooks are 20 years old, they’re so out-dated, they don’t relate to kids (...) so I pick and pull from a lot of different places to base my units; they’re all based on the Common Core; for me to get my kids to meet the standards that are now being asked of them, I have no choice, I have to have like recent material and stuff they can use that’ll help them when they get assessed on the standardised test.”

And for others, adaptation may be taking an existing resource and placing it in a different context within their own material:

“I will maybe look and find an instructional video that’s maybe 2 or 3 minutes long that gets to the point better than I could, and I would use it, or I will look for lessons and if they are for Grade 5 or Grade 3 I don’t use all of it, I just adapt it, I take out what I don’t want and rearrange it.”

What this suggests is that one impact of openness is that it allows a continuum of adaptation to develop, ranging from adapting ideas for their own material to full ‘reversioning’ of content.

Only 12.4% (n=80) of educators (N=644) create resources and publish them on a Creative Commons license. This particular finding may seem somewhat surprising or counter-intuitive given the fact that a majority of educators (67.5%, n=216) consider open licensing important and are also familiar with the Creative Commons logo (55.7%, n=182). This is, however, consistent with the fact that only 26.8% (n=215) of educators are concerned with not knowing whether they have permission to use or change a resource. There is a similar disparity between consumption and sharing practice, for instance 66% (n=201) of Saylor users reported having adapted OER and 24% (n=73) having created their own, but only 8% have published them. Similarly, for Flipped Learning educators, 82.5% (n=90) say that they adapt OER, 43.3% (n=42) create resources and share them publicly online, but only 5.1% (n=5) publish them under a Common Core open license.

In instances where educators have published resources under an open license, how “open” to make a resource was also shown to be important. Barbara Illowsky, co-author of the CC-BY licensed Collaborative Statistics reported that she was able to overcome objections regarding grading workload through partnerships with homework systems such as WebAssign. These would not have been possible if the open textbook had been NC licensed:



If we didn’t put that BY on there, there wouldn’t be other innovations

“...if we didn’t put that BY on there, there wouldn’t be other innovations.”

(Interview, November 2013)

An open licence is not the most significant factor for many users when selecting an OER, with perceived relevance and reputation being most salient. The significance of an open licence varies across users, however, depending on purpose: for instance, for users of Saylor content (who are primarily independent learners) only 17.7% (n=483) said that open licensing was an important factor for them when choosing OER, whereas for community college educators and learners, this rises to 51%. A majority of educators (67.5%, n=216) consider open licensing important and are familiar with the Creative Commons logo (55.7%, n=182).

In the Siyavula educator survey we asked respondents what publishing textbooks with an open license means to them. Responses revealed a range of benefits both to educator and Siyavula themselves:

“I can use already edited material as notes and additions to my teaching. I do not need to redo all the work from scratch which frees my time to seek new teaching techniques.”

“It shows their [Siyavula’s] commitment for free education to all.”

“Freedom. It also means that whatever I contribute to the projects will be free to impact a much larger group of students than a traditional closed licence textbook.”

Openness is less significant if users are consuming OER. Only 12.4% (n=80) of educators (N=644) create resources and publish them with a Creative Commons license and only 26.8% (n=215) of educators indicated that knowing whether they have permission to use or change a resource was a concern. What seems to be clear is that there is a difference between knowing/caring about open licensing when using resources, and knowing/caring about open licensing when creating resources.

Openly licensed content also allows for experimentation and innovation, allowing educators to adapt, alter and share content. This ability to experiment is possibly one of the most significant aspects of OER for educators. For instance, high percentages of both OpenStax College (64.4%) and Siyavula (78%) educators reported that using these OER increased learners’ experimentation with new ways of learning. A majority of OpenStax respondents (80%) reported that they were more likely to discuss using OER with college administrators having used it once.

There is some evidence for the ‘openness as virus’ hypothesis: the idea that once users have been ‘exposed’ to open resources they seek them out elsewhere. For example high numbers of both OpenStax College using educators and Siyavula educator survey respondents report being “more likely” to use other free educational resources/open educational resources for their teaching as a result of using Siyavula/OpenStax (Siyavula: 90.2%, n=55 and OpenStax: 79.5%, n=58). The following quotes also indicate a similar trend and what appears to be an increased sense of community around the use, creation and sharing of OER:



It’s given me the desire to share more openly

"I tend to share my materials more freely than before. I like for people to use my materials since I benefit so much from other people's free sharing"

"It's given me the desire to share more openly"

"Makes me more conscious of my ability to contribute and participate"

"I am more likely to share educational resources openly"

The tendency for openness to encourage sharing and collaboration was also reported by one of the authors of the open textbook Collaborative Statistics, a text that is now "a community textbook," which "over the years has become much better because people contributed to it" through sharing resources such as question banks and building on the original materials (Interview, November 2013). Elsewhere over 50% of Siyavula educator respondents reported that they collaborate more with colleagues as a result of using OER (51.7% "strongly agree" or "agree" n=31) and over 70% reported that they more frequently compare their own teaching with others (72.1% "strongly agree" or "agree" n=44).

There is also evidence for the 'openness' of resources making a difference as to when students can access materials and removing the need for students to sell on their textbooks after they have finished their courses, thus allowing them continuous access to learning. For example:

"They are able to access the textbook and start doing homework immediately rather than being delayed until weeks after the start of the course due to lack of finances."

(Educator using OpenStax College open textbooks)


"Increased reading of the textbook, and a portable textbook that can go with them for review. Unlike other e-textbooks, this one can stay with them."

(Educator using OpenStax College open textbooks)

There is also emerging evidence suggesting that use of OER impacts on student (particularly non-traditional students') perceptions of education, e.g. as expensive and classroom based. As one instructor at a non-profit organisation observed:

"I think the open access way that the Bridges [Bridge to Success] programme was set up [where students could work at their own pace on computers] was very refreshing. People who are coming in ... who haven't been in school in decades were not as intimidated. I think that's why it worked so well for a lot of people..."

(Instructor Non-Profit Interview, June 2013)



Over 50% of Siyavula educator respondents reported that they collaborate more with colleagues as a result of using OER

A majority of OpenStax respondents reported that they were more likely to discuss using OER with college administrators having used it once

Hypothesis C

Access

Open Education models lead to more equitable access to education, serving a broader base of learners than traditional education (OER widen participation in education)

Summary

Learners are using OER in a number of ways that can be interpreted as leading to greater access to education. Some are using them to replace formal study at low cost, whereas for others they are a support mechanism to formal study. Students in higher education are using OER to trial a subject before committing to formal study, and then to supplement their study both in terms of their primary subject and additional topics. Increasing costs in higher education will make this supporting function of OER of greater significance, and it is one currently under-reported in OER literature.

Impact Map summary: <http://oermap.org/hypothesis/580/hypothesis-c-access/>

“ 31% of learners used OER to try university-level content before signing up for a paid-for course

Evidence

Are open education models leading to more equitable access to education?

The emergent picture is mixed, based on evidence from our research with collaborations. There is some negative evidence in the demographics of the informal learners, 57% of whom already have an undergraduate or postgraduate degree (see Table 3). Similarly in the instance of P2PU's Writing for Change course preliminary findings show that over 80% of survey respondents (which represent just under three quarters of total course participants) have at least an Associate Degree or higher (82.9%, n=121) and nearly 40% of respondents having a Masters Degree or higher (38.4%, n=56).

However, one use of OER that was evident was either to support formal students studying already or for trialling out a subject before committing to formal study. For example, 31% of learners (n=1351) used OER to try university-level content before signing up for a paid-for course. The Open University report a 10% conversion rate of learners using OpenLearn OER materials, to going to the formal sign up page of a relevant course. There is evidence to show that OER enables students to develop an interest in their subjects as this quote demonstrates:



“It has allowed for me to develop knowledge easily in areas that I thought would be difficult to learn in due to the inability to buy an in-depth textbook.”

Some learners are using OER as a replacement for formal education which they might not otherwise have access to. For example, 88.4% of all learner respondents (n= 3761) indicated that the opportunity to study at no cost was significant, and for Saylor users 26% of the formal students said they used Saylor as a replacement for HE, perhaps to indulge an interest in a subject they don't feel they can afford to study institutionally. Amongst OER users who are already in higher education, 52.7% indicated that they are using OER to supplement their formal studies.

A longitudinal study is required to determine if this trialling of formal content prior to, or supplementing formal study has any effect on student retention, and such a research piece is now under way at the Open University. Given the increasing cost to students of entering higher education, this function of OER in supporting their choice and also allowing diversity in their study is under-represented in the literature.

Analysis of users of The Open University's OpenLearn OER platform suggest that OER can increase access to education for informal learners with disabilities with 16% of respondents reporting a disability, compared with the UK-wide figure of 8% disabled students in higher education. For all learners this figure came down to 11.1%. Language may also be a significant factor, with 17.7% of all learners and 47% of OpenLearn users stating that they were using OER to improve their English language skills.

There is some overlap with the later Hypothesis F (Finance) as one important benefit of OER (particularly Open Textbooks) is that they reduce the cost of formal education, thus mediating one of the barriers to access.



“ The opportunity to study at no cost is a significant factor in using OER

Hypothesis D

Retention

Use of OER is an effective method for improving retention for at-risk students (OER can help at-risk learners to finish their studies)

Summary

The affordability of OER may have some effect on retention, but it was generally considered that 'at risk' students may experience complex issues that OER alone cannot address. The use of OER to supplement formal study may have an effect on retention (see Hypothesis C).

Impact Map summary: <http://oermap.org/hypothesis/581/hypothesis-d-retention/>

Evidence

Educators (N=567) were asked to agree or disagree on a 5-point Likert scale with the statement 'OER use increases the likelihood of students at risk of withdrawing, continuing with their studies'. A majority (51.1%) were undecided and while the percentage of those in favour was 22.4%, those who disagreed or completely disagreed were a higher 26.5%. The following quotes, taken from the 'Comments' box, argue the connection between 'at risk' and 'under financial difficulties':

"Some at-risk students benefit from OER because of the obvious release of financial obligation. Others are challenged by the technology and OER actually makes their success rates drop."

"Many at risk students don't have the means to access high speed internet or have limited technological availability. To assume they do is simply wrong. Additionally, they have more complicated extrinsic factors impacting their lives, which may require more intensive contact from the instructor to keep them involved in the course. OER is not going to be a make or break issue of retention. It is not a panacea for at-risk students."

"The open textbook that we developed has been used for several semesters in multiple sections of an online course. Retention has improved, student feedback is great, the course enrolments are going up."

“Retention has improved, student feedback is great, the course enrolments are going up”

A small number of educators (N=100) were queried about the aspects of OER that help improve retention for students at risk of dropping out of their course of study (Table 5). Cost and access can be identified as the most important factors influencing retention.

Table 5. Aspects of OER affecting retention

	EDUCATORS N=100	
	Count	%
Reduced cost of study materials	85	85
Greater range of learning methods	53	53
Materials can be used flexibly	66	66
Materials can be accessed at any time	80	80
Materials can be adapted to suit student needs	49	49
Use of resources for improving study skills	50	50
Materials can be used for improving non-native language skills	28	28
Materials are available in different languages	16	16
Availability of culturally-relevant materials	25	25

40.9% of all formal learners in our sample consider that OER have a positive impact in helping them complete their course of study.

There is some overlap here with Hypothesis C, as the usage there could lead to increased retention, and Hypothesis F which examines financial impact of OER. The free aspect of OER attracted most attention with this hypothesis, and a more longitudinal study would be required to determine whether other aspects of openness have an effect, such as the ability to adapt content to suit learners, or to provide a range resources which might suit different learner's needs. OER Research Hub will initiate some of this work in Fall 2014 when we will be working directly with institutions who have large cohorts of students using OpenStax College textbooks to assess impact.

“ 40.9% of all formal learners in our sample consider that OER have a positive impact in helping them complete their course of study

“ Some at-risk students benefit from OER because of the obvious release of financial obligation

Hypothesis E

Reflection

Use of OER leads to critical reflection by educators, with evidence of improvement in their practice (OER use leads educators to reflect on their practice)

“Educators “strongly agreed” that OER use broadened their range of teaching and learning methods

“78% of community college respondents felt that using OER encouraged them to collaborate more with colleagues

Summary

There is strong evidence that OER use and exposure leads to reflection on practice by educators. It causes them to incorporate a wider range of content, to consider different teaching approaches and to reflect upon their role as educator. This is a particularly striking outcome from the data around this hypothesis.

Impact Map summary: <http://oermap.org/hypothesis/582/hypothesis-e-reflection/>

Evidence

Use of OER tends to reliably lead to reflection on their own practice by educators. This could be a result of exposure to other teaching approaches, of raising awareness of issues that had not been considered before, or through the process of adaptation.

The question here asked educators their views on the impact of OER use on their own teaching practices: 40.6% (n=281) said that they use a broader range of teaching and learning methods; 37% (n=250) agreed that they reflected more on the way that they teach; 32.1% (n=215) that they more frequently compare their own teaching with others; 23.4% (n=133) that they now use OER to develop their teaching. Data from other questions in the surveys also tell us that 33.5% (n=308) of educators say they have written a blog post in the last year, 14.6% (n=94) have added comments to a repository suggesting ways of using a resource, and 22.4% (n=144) comments on the quality of a resource.

As reported under Hypothesis B, educators often use OER to draw inspiration. For example most educators using Saylor content said they did so to get new ideas for teaching (73%); prepare for teaching (53%) to learn about new topics (55%) and to supplement lessons (51%). While overall 29.8% of educators felt that using OER encouraged them to collaborate more with colleagues, in some cases this was more marked: for example, 78% of community college respondents felt this was the case.

Exposure to OER tends to lead to incorporation of a wider range of content by educators. This in turn promotes reflection; for example, with Siyavula educators, 92.2% of respondents told us that they “strongly agree” or “agree” that they use a broader range of teaching and learning methods as a result of using OER (n=59) whilst over half of educator respondents told us they “strongly agreed” that OER had broadened their coverage of the curriculum (n=34).

This hypothesis was also supplemented in interviews with educators. In the K12 sector, we conducted 15 interviews with teachers following the Flipped Learning approach in their classrooms, and teachers using Vital Signs, a citizen-science programme for middle school children. They all answered the question ‘How has your use of OER changed, if at all, the way you think about teaching?’ The following extracts from the interviews suggest reflection is a product of OER use, in as much as teachers have access to more resources than ever before, are exposed to other ways of teaching, have to be aware of their own limitations, and are given the tools to teach the way they understand good education is about.

“I used to think that teaching was just what I did in front of the class when my students were there, but teaching is no longer that, my students have 24/7 access to our entire curriculum... it’s allowed me to be able to get my students more engaged in the material and actually doing Math rather than just passively sitting and listening to me do the Math, it’s allowed me to be able to incorporate more higher order thinking questions in my classroom, so that’s kind of changed a lot of the ways that I think about teaching from that perspective.”

“It used to be that when I thought about preparing for a lesson I would look at a book and see what they did and I then would kind of teach a lesson similar to it but now I can go online watch a video or look at somebody else’s material that they put out there, see what they’re doing and either modify what they’re doing and bring it into my classroom or just get a totally different perspective on it and allow my students to get multiple perspectives on a topic.”



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material

Hypothesis F

Finance

OER adoption at an institutional level leads to financial benefits for students and/or institutions (OER adoption brings financial benefits for students/institutions)

Summary

There is strong evidence for savings with Open Textbooks that are used to replace compulsory set texts. The evidence for cost savings of other forms of OER is less clear. Often it is difficult for educators to know whether their institution saves money, and what happens to any such savings. The cost and benefits of free resources are evident (and readily understood) but greater accountability is required to make these transparent to all stakeholders.

Impact Map summary: <http://oermap.org/hypothesis/583/hypothesis-f-finance/>

Evidence

Where open textbooks are used to replace costly purchased ones, there is an obvious saving for students. If purchase occurs at an institutional or regional level the savings can be more upscale. This represents a major advocacy point for the adoption of OER, and considerable work on savings has been conducted by researchers such as David Wiley and John Levi Hilton III .

Unsurprisingly a majority of educators (73.8%, n=135) believe that using OER saves students money (Table 6). A greater proportion of students (79.6%, n=39) agree with educators. Librarians, however, are mainly undecided (51.2%, n=83).

Table 6. Do students save money using OER?

	EDUCATORS n=183		FORMAL LEARNERS n=49		LIBRARIANS n=162		ALL RESPONDENTS N=394	
	Count	%	Count	%	Count	%	Count	%
Yes	135	73.8	39	79.6	61	37.7	235	59.6
No	20	10.9	7	14.3	18	11.1	45	11.4
Don't know	28	15.3	3	6.1	83	51.2	114	28.9

Quantifying these savings can be problematic as such calculations often rely on the assumption of 100% purchase by students. However, more precise calculation of student savings is possible. For example, the student savings of over \$1 million at De Anza College were calculated as follows:

“Students never paid more than \$50 for the books, at the bookstore, new. We estimated based on how many students had used the book and at \$50 about three quarters of them

“ Without any doubt my students are saving money!

“ Where open textbooks are used to replace costly purchased ones, there is an obvious saving for students

would buy it new. I started surveying the students to see buying it new, buying it from their friend, buying it used. ... there was research that was done on the original calculation and then we just continued after that. So we estimated that \$50 with about three quarters of the students who were using the book, buying it new, because that's what was happening and that's what was being saved each year. It's probably a conservative estimate..."

(Interview with Barbara Illowsky, November 2013)

These costs are easier to estimate with Open Textbooks, but less obvious for the use of online OER, where cost savings may arise through reduced course production time, but are likely to be used in different functions. The real benefit of Open Textbooks is that all students now have continuous and versatile access to a text (rather than the costs) as illustrated by these quotes:

"Without any doubt my students are saving money! Only one has purchased a copy of the textbook - everyone else uses their laptop, tablet, or prints out what they want."

"I think that it is highly beneficial to have a brand new text to use, I would have been forced through budgetary constraints to purchase other texts which are 5-10 years old."

Just under 80% of OpenStax College textbook-using students (both informal and formal) believed that they had saved money by using OpenStax College textbooks (79.6%, n=39) with a conservative average saving estimate of \$208 per student (n=24).


In response to the question 'Do you think that your institution benefits financially by using OER?' respondents tend to agree positively but it is in the ranks of the educators where the highest percentage of No answers occurs. Amongst librarians over 40% told us they didn't know whether savings had been made through the use of OER and just over half of all librarian respondents told us they didn't know whether students had saved money by using OER. Similar confusion was seen with Community College respondents, of whom 44% thought that OER had saved money, but 37% didn't know (and 19% thought they hadn't). This may indicate an issue around transparency regarding any institutional savings made from OER adoption.

The qualitative data throws some light onto the issue, which indicates that savings may not be as direct as assumed:

"Indirectly, making college more affordable allows our students to stay at our university."

"Down the road [students] may talk to other potential students. When they find out that teachers care about cost and readability, they are more likely to choose your college."

"Since we are all using online version the school saves a lot of paper and money."



The real benefit of Open Textbooks is that all students have continuous and versatile access to a text



Making college more affordable allows our students to stay at our university

²TJ Bliss, John Hilton III, David Wiley and Kim Thanos "The Cost and Quality of Open Textbooks: Perceptions of Community College Faculty and Students." *First Monday*, Volume 18, Number 1 - 7 January 2013. <http://firstmonday.org/ojs/index.php/fm/article/view/3972/3383>.

Hypothesis G

Indicators

Informal learners use a variety of indicators when selecting OER (Informal learners use a variety of indicators)

“ A majority of informal learners choose a resource that is relevant to their particular needs

“ Formal learners and educators seem more interested in knowing that the resources come from a reputable source

Summary

Informal learners do use a variety of indicators when selecting OER, the most significant being relevance; a good description of learning outcomes; and ease of download. There is general agreement between all groups of users on the significance of various factors in selecting OER, although for educators the presence of an open licence is often more significant.

Impact Map summary: <http://oermap.org/hypothesis/584/hypothesis-g-indicators/>

Evidence

Although this hypothesis is phrased in terms of informal learners, it applies across all types of OER users. When it comes to selecting OER, informal learners guide their choices widely (Table 7). From a total of 2997 responses, a majority of informal learners choose a resource that is relevant to their particular needs (70%, n=2098); has a good description of learning objectives and outcomes (63.3%, n=1897), and is easy to download (51.6%, n=1546). In terms of those indicators with the least appeal, respondents report that having a catchy title or attractive images does not have much weight in informal learners' selection of OER (8.5%, n=256).

Having an open licence allowing adaptation (13.8%, n=415) or a CC license (15.5%, n=466) does not influence choice much either, although 84.7% (n=788) of informal learners say that they adapt resources to fit their needs. There is a marked difference here with educators, 36.4% of whom indicate that an open licence is important, so awareness of rights and concerns about adaptation are greater for this group. As learners are often adapting for personal use, they may be less concerned about rights. For some groups, the importance of an open licence is increased. For example, across two cohorts of the School of Open this averaged 71.8% (the second most significant factor). This group will be more aware of open licensing since they are studying with the School of Open, which indicates that once awareness of open licences is raised, its significance increases.

Other differences can also be seen between user groups. In our sample, formal learners and educators seem more interested in knowing that the resources come from a reputable source; interestingly educators do not rely on previous experience of having used the resource in class.

Table 7. Factors affecting OER selection

	EDUCATORS n=789		FORMAL LEARNERS n=788		LIBRARIANS n=2997		ALL RESPONDENTS N=4779	
	Count	%	Count	%	Count	%	Count	%
Evidence of interest in that resource (e.g. lots of downloads)	355	45	350	44.5	1142	38.1	1930	40.4
The resource being recently created, uploaded or updated	314	39.8	299	37.9	904	30.2	1625	34
The resource being easy to download	494	62.6	458	58.1	1546	51.6	2614	54.7
A description of learning objectives or outcomes being provided	513	65	514	65.2	1897	63.3	3060	64
The resource being created by a reputable/trusted institution/person	519	65.8	472	59.9	1679	56	2850	59.6
The resource having a Creative Commons license	265	33.6	183	23.2	466	15.5	1056	22.1
The resource having an open license allowing adaptation	287	36.4	161	20.4	415	13.8	986	20.6
The length/complexity of the resource	307	38.9	339	43	1045	34.9	1759	36.8
Use of interactive or multimedia content (e.g. video)	412	52.2	412	52.4	1299	43.3	2198	46
Positive user ratings or comments about the resource	372	47.1	362	45.9	1335	44.5	2172	45.4
Personal recommendation	378	47.9	338	42.9	1138	38	1973	41.3
Having previously used this resource successfully	399	50.6	329	41.8	1068	35.6	1913	40
The resource being relevant to my particular interests/needs	793	75.2	570	72.3	2098	70	3432	71.8
The resource featuring a catchy title or attractive image(s)	92	11.7	113	14.3	256	8.5	480	10
Being required to use a resource for a project or study task	N/A	N/A	264	33.5	601	20.2	1076	22.7
The resource having previously been used with students	143	18.4	N/A	N/A	N/A	N/A	469	10
A detailed description of the resource content being provided	395	50.1	396	50.4	1336	44.6	2246	47

We ran independent-samples t-tests to compare how formal and informal learners go about selecting OER. We found there was a statistical difference between the two groups in that informal learners seem to rely less than their counterparts on 'Evidence of interest in that resource (e.g. lots of downloads)', 'The resource being recently created, uploaded or updated', 'The resource being easy to download', 'The resource having a Creative Commons license', 'The resource having an open license allowing adaptation', 'The length/complexity of the resource', 'Use of interactive or multimedia content (e.g. video)', 'Having previously used this resource successfully', 'The resource featuring a catchy title or attractive image(s)' and 'A detailed description of the resource content being provided'; however, the magnitude size is small in all items.

Hypothesis H

Support

Informal learners adopt a variety of techniques to compensate for the lack of formal support, which can be supported in open courses (Informal learners develop their own forms of study support)

“ Only 18.5% of informal learners say that not having the support of a tutor/ teacher to help them is a barrier to their use of OER

Summary

Informal learners use techniques such as study notes, participating in online discussion forums and writing blogs to support their own learning. There seems little evidence that informal learners are compensating for lack of formal support with other mechanisms (such as social media), but rather that they view support as less significant.

Impact map summary: <http://oermap.org/hypothesis/585/hypothesis-h-support/>

Evidence

The hypothesis assumes that informal learners miss having formal support, however data indicate that this is true only for a minority in our sample: only 18.5% of informal learners (n=316) say that not having the support of a tutor/teacher to help them (N=1708) is a barrier to their use of OER.

Respondents were asked to indicate which techniques they used to support their learning. The spread of answers indicates that informal learners do indeed use a variety of techniques to compensate for the lack of formal support: the most common of these techniques is writing their own study notes (50.5%, n=967); participating in online discussion forums (38.7%, n=740); and writing or reading blogs (38.6%, n=739). However, Cronbach Alpha is .666 on 13 items, which indicates low reliability.

We carried out an independent-samples t-test to compare the support techniques that informal and formal students use. There was a significant difference in discussion in online forums, discussion with others in person, writing my own study notes, use of additional resources such as CDs, books and video and use of a study calendar, showing a higher mean for informal learners. However, in all instances the magnitude of the difference in the means was small, indicating that even though the difference in use of these particular techniques between the two groups is significant, its magnitude is negligible.

Table 8. Support techniques employed by informal learners using OER

	INFORMAL LEARNERS N=1913	
	Count	%
Discussion via social networks	499	26.1
Discussion in online forums	740	38.7
Discussion with others in person	706	36.9
Discussion via microblogging	115	6
Discussion via videochat	220	11.5
Consulting and/or editing wikis	380	19.9
Writing or reading blogs	739	38.6
Writing my own study notes	967	50.5
Informal study groups	308	16.1
Use of a learning journal/diary	480	25.1
Use of additional resources (CDs, books, video)	659	34.4
Use of a study calendar/plan	462	24.2
Use of digital note-taking applications (e.g. Google Docs)	367	19.4

“
Informal learners do use a variety of techniques to compensate for the lack of formal support

Hypothesis I Transition

Using OER production as a recruitment tool can be a sustainable option for education institutions

Open education acts as a bridge to formal education, and is complementary, not competitive, with it (Open education acts as a bridge to formal education)

Summary

Users indicate that they are less likely to take formal study than to carry on using OER. However, there is still a significant proportion who indicate that they would consider formal study. This means that using OER production as a recruitment tool can be a sustainable option for education institutions.

<http://oermap.org/hypothesis/586/hypothesis-i-transition/>

Evidence

The evidence from the survey data may provide evidence against this hypothesis. Respondents had to answer on a 4-point Likert scale how likely they thought certain future behaviour as a result of using OER. A majority of informal learners (83.2%, n=2197) say they are more likely to take another free course or study a free open educational resource, while only 24.2% (n=588) say that they would go on to take a paid for course. So while informal learners using OER are happy to continue using, recommending and sharing OER, they are not necessarily willing to pay for formal education. Some learners indicate that studying with OER makes them less likely to take formal study in the future, for example almost one third of the formal students using Saylor felt that their experience of using the materials made them less likely to study a paid-for course in future. This is presumably because they found the quality of the material was high enough to meet their learning needs.

Table 9. Predicted impact of OER on future behaviour

INFORMAL LEARNERS					
	More likely	No change	Less likely	Don't know	N
Take a free course/study a free open educational resource	84.7	6.6	.3	8.4	2593
Take a paid-for course	24.2	37.3	19.2	19.3	2428
Do further research in the subject you are interested in	81.4	8.7	1	8.9	2473
Download more materials from [repository]	78	9.7	1.2	11.1	2470
Make use of [repository] materials for teaching	38.5	30.1	8.9	22.6	2278
Share [repository] materials with others	60.4	19.4	4	16.2	2361
Recommend [repository] content to others	80.2	7.3	1.3	11.2	2478

As stated in Hypothesis B, 31.5% (n=961) of informal learners say that their interest in using OER is a chance to try university-level content before signing up for a paid-for course. Although this is the second least popular answer and well below the top 89% (n= 2711) who say they want to have 'the opportunity to study at reduced or no cost', it may still represent a significant function of OER.

Similarly, while only 29.8% (n=205) of formal learners say they studied via OER before joining their course, if these numbers were representative across higher education, it would indicate a substantial population. Although this is not a selective sample, since it is of users of OER, not a general population, it might indicate a future pattern as awareness of OER increases. In addition 31.3% (n=210) say their use of OER influenced their decision to register for their current course.

What this indicates is that OER form part of a complex learning ecosystem, comprising formal study, MOOCs, OER, general online resources and traditional resources. It could be interpreted as negative evidence as the figures are relatively low. However, 24.2% of respondents indicated that they would be more likely to study formally after studying with OER. If this was replicated across all OER and transferred into formal registrations, it would represent a viable business model for universities, and a much more effective form of marketing than most other media.

This quote indicates how this ecosystem may translate for OER and universities:

"I'm not currently registered in any course of study, but if my study experience at Saylor.org will work out the way I imagine, then I assume it may provide reassurance in giving a try to attending formal university courses in disciplines previously only dreamt about."

There is evidence for OER acting as a 'bridge' by enabling students (particularly non-traditional students) to develop learning skills required for their studies or vocational courses, particularly in conjunction with educator and peer support. The flexibility of OER enables educators to offer materials such as the Bridge to Success whole course OER to students as and when needed.

This effect can also be seen when OER acts as a 'bridge' to enable students (in particular non-traditional students) to persist and gain confidence in their studies. This is partly because OER can provide flexible materials which can benefit a range of students, including those who are returning to education.

"...when I started working with the Bridge to Success programme a lot of questions that I've always had, was right there. I'd just find myself working for hours and hours and hours on the computer at home doing the programme ... answers a lot of the questions that I didn't get from the teachers when I was coming through school because I was just pushed though school ... either you had it or you didn't have it. It made me so frustrated that I just stopped going to school ... It has opened up a door in my life where math is just like [clicking fingers] this now, it's very easy..."

(Community College Student using Bridge to Success's Succeed with Math, Interview, June 2013).

24.2% of respondents indicated that they would be more likely to study formally after studying with OER

Hypothesis J

Policy

Participation in OER pilots and programs leads to policy change at an institutional level (OER use encourages institutions to change their policies)

Summary

While there are numerous top-down initiatives to drive OER adoption (especially with regards to open textbooks), examples of bottom-up policy adoption are rarer. There are some examples; particularly amongst community colleges where participation in OER projects has led to the formal adoption of an OER policy. However, we have found that OER practice is often not formalised as policy.

Impact Map summary: <http://oermap.org/hypothesis/587/hypothesis-j-policy/>

Evidence

In examining this hypothesis we mapped and examined a range of relevant policies. There are surprisingly few examples of where initial OER adoption has then led to a formal policy being adopted. Our work with collaborations also indicates that while there may be informal policies, or agreed practice regarding OER use, it is often difficult to find a formal policy referencing OER. For example, just under 10% of librarian survey respondents told us that they were aware of a change to policy/practice that had taken place at their institution as a result of participation in OER pilots/programs (8.6%, n=14).

One example of where involvement in an OER project has led to institutional change is the Bridge to Success project. University of Maryland University College (UMUC) reports that:

“...would like to go as close as possible to the zero cost per course ... Bridge to Success kind of got us thinking about that. That these materials that are available, they’re open, they are of good quality, and these are the kinds of things that we could embed in our courses. Certainly a for-credit course could use that material instead of buying any kind of course material. So I think that was another impact that Bridge to Success has had ...”

(Interview, June 2013).

OER
practice is
often not
formalised
as policy



We found only 14 examples where a policy innovation could clearly be said to have arisen as a result of OER pilot activity. These included:

- The Open High School of Utah
- National uptake of Siyavula textbooks in South Africa
- Policies supportive of OER adopted by the Africa OER Network
- The 'Digital School' programme in Poland
- OER policies at Kwame Nkrumah University of Science and Technology (KNUST) and The University of Ghana
- Amarillo Independent School District
- Support for open textbooks in Illinois

Because of the difficulties of trying to establish a link between pilots and resulting policy change, the emphasis was shifted towards capturing these policies as comprehensively as possible and creating a custom layer for OER Impact Map. Data from SPARC, POERUP and Open Policy Network was consolidated into this map and augmented with further research by OER Research Hub. The map contains details of 96 policies at the time of writing (8 international; 33 national; 27 regional and 26 institutional). From this activity we learn that there are drivers for policy change at all educational levels and at different levels of governance with the possibility of financial savings a main factor – especially with respect to open textbooks. Moreover, a trend toward greater openness is often espoused, suggesting greater influence. One area that would likely make a difference to OER adoption but which is still rare is for institutions to provide greater professional recognition for OER use and creation.

The OER Policy Map can be accessed via <http://oermap.org/policy-map/>.

“OER materials are an integral part my career. The depth and quality of materials that are available enables me to incorporate OER into just about everything I do for my students. They provide variety so that I can use a different teaching technique that incorporates OER each day. I have been able to convince the statistics department to adopt the OER textbook so that now it is used of all of our statistics courses at our college. No student drops the class because of finances.”

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Hypothesis K Assessment

Informal means of assessment are motivators to learning with OER (Informal assessments motivate learners using OER)

Summary

Automatic feedback and quizzes are popular forms of OER, although human support remains valued by learners.

Impact Map summary: <http://oermap.org/hypothesis/588/hypothesis-k-assessment/>

Evidence

We have little data so far to address this hypothesis. Findings at present indicate that the most commonly experienced informal means of assessment are 'Being given automated feedback on submitted work' (52.4%), 'Being allowed to talk with other learners on the course about my experiences' (50%) and 'Being allowed to look back and review my progress through the course' (47.6%). Interestingly, the most motivating means of assessment is 'Having an educator/instructor available to provide support' (38.1%).

Quizzes are reasonably popular OER resources, with 55.7% of formal learner (n= 752) and 47.6% of informal learners (n= 1013) reporting using them. This compares with an average of 68.1% (n= 3198) for use of video. We found a significant difference in the use of quizzes between informal learners (M= 1.52, SD= .50) and formal learners (M=1.44, SD= .49), $t(2884) = 4.63$, $p < .05$, but the magnitude of the difference in the means was very small (eta squared = .006), with type of learning explaining only a minimal per cent of the variance in use of quizzes.

In addition, the possibility of accreditation seems to be motivating to OER users, as suggested by survey respondents when asked about 'other' factors that influenced their choice of OER:

"Transferable credits and job/ work experience or accreditation"

"College credit"

"Certificate of accomplishment or completion"

"Accreditation so that I can use to apply toward a degree or for professional designation requirements (i.e. CPA)"

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Just under a third of P2PU's Writing for Change pre-course respondents reported previously finding the possibility of being awarded an online 'badge' for participation, skills or knowledge motivating (30.4%, n=28). Although the circumstances and composite of the cohorts (most of the facilitated courses we surveyed were aimed at educators and one course was ran and promoted by the National Copyright Unit (NCU) in Australia) may have biased the findings, we will have further results on this hypothesis shortly, including post-course surveys for Writing for Change and our own course on P2PU Open Research.



Preliminary findings from the Peer 2 Peer University Writing for Change pre-course survey reveal that this group of respondents found courses which offered the chance to self-review progress and check answers motivating. Over 50% of respondents told us that they found being allowed to look back and review their progress through the course (52.2%, n=48) and/or being allowed to check whether they had answered a question correctly (51.1%, n=47) motivated them to study. The third most popular responses to this question also reflect this: nearly 45% of respondents said they found being given automated feedback on submitted work and/or being required to complete tasks for which an instructor would give feedback motivating (both 44.6%, n=41).

Peer 2 Peer University (P2PU) courses, including Writing for Change (which will be assessing its success partly on the rate of community cohesion post-course) aim to engender "peer-learning" and "community." It will be of interest to see if participants' experiences post-course change as a result of participating in this type of informal learning opportunity. Motivating factors listed for the question above involving other students scored less highly and thus appear to have been less motivating to this group of respondents. For example, only 35.9% of participants told us that they had found being required to complete tasks for which others students would give feedback motivating (n=33) and 30.4% of respondents told us they had found working collaboratively with other people to complete tasks motivating (n=28).

In the pre-course, another respondent noted:

"Past teamwork & learning - in-person or online - have not been positive. For adult learners like myself, I want to get what I need and get out"

(Writing for Change pre-course survey respondent, August 2014).



“Offering the chance to self-review progress and check answers are motivating factors




Conclusion

The OER Research Hub has found good evidence across each of the eleven hypotheses set out at the inception of the project in 2012. There are varying amounts of evidence identified with each of the hypotheses, and varying degrees of support. What is perhaps most significant is the overall weight of evidence. This represents one of the most complete pictures of the impact of OER in its current state. There is still much more work to be done, however. Acquiring comparative data which will illustrate that the implementation of OER has an impact on performance requires longitudinal studies and establishing excellent relationships of trust as this data is sensitive. In addition, the picture for some hypotheses will remain incomplete unless institutions can be encouraged to share information about the impact OER is having on financial performance and student grades.

With over a decade's investment in OER there remains surprisingly little reliable empirical research on OER impact. Many published studies are reports of implementation projects, and state downloads or units released as evidence. Much of the literature is driven by belief or advocacy, and states the intended benefits of OER without an adequate evidence case. Lately we have seen an increase in interest in rigorous empirical research, particularly focused on the use of open textbooks. There is an acute need for such research now to aid the next phase of OER implementation. The initial message of free, adaptable resources was successful in creating a global OER community who are now ready for more nuanced findings that demonstrate the different types of benefits for different audiences. Both this report – and the wider work of the OER Research Hub – are significant contributions to this changing emphasis in the OER community, but research needs to be an element of all OER projects in future. By closing the feedback loop through open sharing of information and resources it will be possible to gain the critical mass of evidence required for future phases of OER implementation.

“ By closing the feedback loop through open sharing of information and resources, it will be possible to gain the critical mass of evidence required for future phases of OER implementation





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