SCORE FINAL REPORT

(NB this document is no longer retrievable on the SCORE or HEA websites so has been re-released by the author in May 2015). More about the SCORE project can be found on the OU website: http://www.open.ac.uk/score/

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SCORE Project & Theme: Virtual Analytical Laboratory OPEN!

SCORE Fellowship Period: September 2011 to August 2012

Date: 30th June 2012

CASE STUDY CONTENTS

SUMMARY

(TOP)

There is a national need to develop laboratory skills in science undergraduates, and this starts with supporting students in their transition to science at university. Also there is a nationally recognised skills gap and the need to enhance practical skills in graduates, as identified by employers and government bodies. Research shows the problem is confounded since students often enter programmes at university in the UK with no prior practical experience, and we have shown that students using an existing website containing laboratory skills OER can gain a basic understanding of the principles enough to boost their confidence before entering the laboratory for the first time. The potential impact of OER in this sector is huge, with around one fifth of university entrants studying a programme with laboratory science content, be it as part of pre-clinical medicine, biology, biomedical sciences or veterinary science programmes. Multiply this potential audience up globally and the scale is increased.

The aim of this fellowship project is to use existing and new OER to develop an online laboratory skills course. There appears to be a growing trend toward less granular content in the form of lessons and short courses. In this project OER were searched for, reused, and repurposed if required or appropriate. The course included online assessment in the form of multiple choice questions (MCQ) which were generated by the students themselves and released as OER. The online course was deployed using Moodle, and other routes for delivery for mobile and tablet devices are also being explored.

The methods employed to evaluate the impact of the laboratory skills courses included the use of online surveys to ascertain levels of awareness and attitude, and videos of students using OER were collated. This research provided valuable input into the evolution of the project and helped to improve the quality of the OER released and also shaped the design of the course.

This case study explores how there are many technical barriers entrenched in OER development and open education practices, and these provide many barriers to the use and reuse of OER not just by our traditional target audiences – educators and students, but by more unexpected users of materials like the general public. The OER community is challenged to deeply consider the use of more "open" technical solutions. Our assumption of who our users are is also questioned, and therefore so is our pre-conceived notion of what impact OER is having on global education.

AIM

(TOP)

The aim of this fellowship is to build and evaluate an open online course on the subject of laboratory skills and techniques, at a level to target undergraduate science students, but not being exclusive to other audiences.

The course(s) will be formed by using and repurposing existing OERs, available from our Virtual Analytical Laboratory (VAL, http://www.tinyurl.com/oerval) and other sources such as Jorum (http://www.jorum.ac.uk). The present VAL OER are individual videos and animations and are not always complete learning packages, and offer no form of assessment. The goal for the present work was to produce a model that offered a more effective learning solution.

This case study reports on the scientific context and the challenges of developing a course that is open / accessible / interoperable, and how to distribute it via the web. I will discuss ideas and themes emerging from the evaluation of user and learner engagement with the resources, and make recommendations to the OER community particularly with focus on the more technical aspects of open education that perhaps tend to be more overlooked.

ACTIVITIES – methods employed, tasks undertaken, participant / user engagement and feedback.

(TOP)

SCORE project approach

Figure 1 summarises the steps taken in the project. A starting point was the searching and discovery

of existing OER, and an evaluation of copyright and technical compliance. Alongside Google searches for laboratory skills and techniques, repositories Jorum and MERLOT were also used, as were known subject sources for example the former HEA Bioscience Subject Centre.

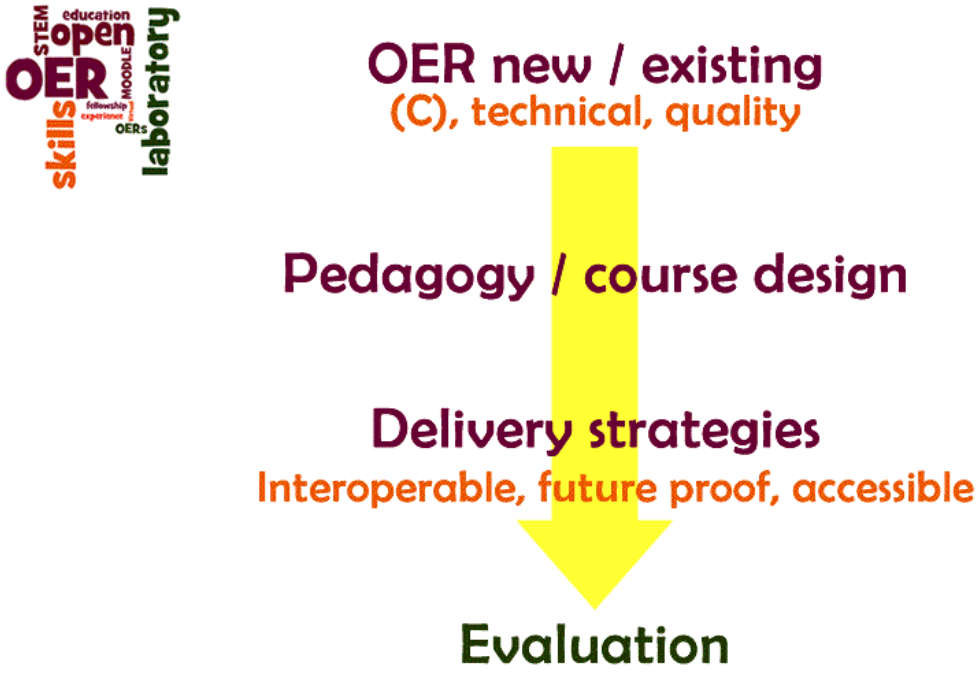

Figure 1 Summary of SCORE project approach

The next consideration for the SCORE project was how to produce short courses that were pedagogically effective and delivered the goal of being open. Based on current trends for "bite sized" learning, and from understanding user activities on our existing laboratory skills website VAL, it was thought that OER should be bundled into short courses lasting between 10 and 15 minutes. One aim was to ensure OER were accompanied by eAssessments since surprisingly most OER activity seems to focus on instructional content rather than assessment materials (Hatzipanagos 2012). A number of delivery platforms were then considered and selections made based on solutions that would be interoperable across a range of devices, operating systems and platforms, that would ensure accessibility to all learners on-line and off-line, and that where possible might be future-proof.

The evaluation strategy was embedded throughout the project and formative feedback from online surveys, student observations and the analytical data was used to shape some of the project decisions. A final summative evaluation of the impact of the courses, their content and the preferred delivery mechanisms is planned for summer 2012 and results will be reported to the SCORE community at a later date.

Students as producer's

One idea implemented in the project was to produce a number of eAssessments in the form of multiple choice questions (MCQ) to provide formative and summative feedback for course users. An approach was adapted from Bevitt and Morris (2011) who successfully encouraged students to produce MCQs for eAssessment in the life sciences. In the current project, students using the

existing VAL lab skill OERs in computer sessions and practicals were asked from time to time to take 10 minutes to reflect on what they had learnt and in doing so produce one MCQ. As a result over 100 laboratory skill questions were generated, and after some selection and editing, these in turn were released as OERs.

Evaluation methods

User questionnaires were distributed and the results were analysed using the online survey tool SurveyMonkey (http://www.surveymonkey.com). This included an annual "new university student survey" in October 2011 which asks new science students at De Montfort some basic questions regarding prior laboratory experience and career aspirations. Surveys also included one assessing student awareness and attitude to OER, and surveys embedded within the VAL website to evaluate user experience.

To gain a richer insight into student views and use or OER, videos of individuals using VAL in a computer tutorial were recorded. Additional information regarding user numbers and demographics was obtained from the VAL website analytical data was generated using Google Analytics which is a free service providing a piece of HTML code which embedded onto web pages provides details of "visitor" activity and demographics, one "visitor" referring to access through a workstation (PC, mobile device) in a 2 hour time frame, rather than individual human users. Other social network data and file sharing data was also collated.

Student feedback on OERs

Some interesting discussions with students regarding their use of OER revealed their wish to be able to critically evaluate resources as they would text-based journal articles. Students use electronic materials widely to support their studies and reported the need for more detailed information. They felt that knowing the author's name and affiliation, as well as date of publication and the learning objective was essential to be able to select materials for use, and that many resources on YouTube for example did not contain this information. This was insightful and fed into the OER development process, and as a result of this SCORE project ALL OER released consisted of clear titles and credits containing the following information:

- Resource title reflecting learning outcome
- Author name and affiliation
- License terms (usually CC BY SA) and attribution details (e.g. De Montfort University)
- Date of release
- Funding / project sponsors
- Links to affiliated websites and contact details

OUTPUTS – OERs created, reports, publications, open data etc.

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1. *SCORE Fellowship Project Showcase*

A publicity video was produced for the SCORE project that included a video montage of student's using the lab skills OER, along side animations and a musical accompaniment!

http://www.youtube.com/watch?v=tj6I7wN6zNI&feature=plcp

2. *Updated lab skill OERs*

A series of laboratory skills OERs were created from repurposing existing materials to incorporate titles and credit details, in accordance with student feedback. The OER were released onto a De Montfort University website specifically designed to house health and life science OERs, part of the UKOER phase 3 project HALSOER (Health and Life Science OER - http://www.biologycourses.co.uk). The domain name is selected for reasons of search engine optimisation partly being key phrase likely to be used by school-age users interested in biology at university, and being a phrase that generated a reasonable amount of daily search traffic on Google.

3. *OER thematic "bundles"*

The lab skill resources were released as part of WordPress blog articles that contained a "bundles" of OER. For example, resources on how to use a pipette were grouped into ONE blog article and comprised of 7 separate elements in total including video, PDF files of instructions and accompanying transcripts. The blog format has the advantage of incorporating an RSS feed to facilitate discovery, e.g. http://www.biologycourses.co.uk/biomedical-science/how-to-use-a-pipette. All video resources are housed on YouTube to widen discovery and generate long-term and sustainable traffic back to the website.

4. *Lab skill courses*

It was decided to incorporate Moodle onto the hosting server which is a free and open source content delivery platform, (http://www.biologycourses.co.uk/moodle). Moodle allows users to register to set up a learner account which would then enable them to track their progress online and to save their data.

5. *Publications and presentations*

A number of national and international conference presentations are the product of this fellowship, and further publications are planned as learner data will be gathered beyond the duration of the project timeframe.

- **STEM Annual Conference**, Imperial College London, April Viv Rolfe and Mark Fowler. Building external partnerships to support STEM education opportunities. Presentation. http://www.slideshare.net/viv_rolfe/v-rolfe-stem-2012-employer-engagement-in-oer-12april2012

- **OER12 / OpenCourseWare Conference**, Cambridge UK, April. Viv Rolfe and Simon Griffin. Using Open Technologies to Support a Healthy OER Life Cycle. Presentation. http://www.slideshare.net/viv_rolfe/v-rolfe-oer12-conference-search-engine-optimisation-17april2012

- **Sloan consortium annual conference**, Las Vegas, July 2012. Sponsored by MERLOT. A 50 minute conference presentation will talk about STEM OER, with outputs from the SCORE fellowship project and UKOER phase 3 project HALSOER.

FINDINGS – insights gained, policy influenced, what should SCORE do with the findings?

(TOP)

The findings from the project are divided into seven themes.

1. *Sector need for laboratory skills*
2. *What is the global perspective?*
3. *OER Discovery and Reuse – not really open for business!*
4. *Exploration of granularity and diversity*
5. *Open resources versus open courses?*
6. *Course construction and delivery*
7. *Actions from this study*

1. *Sector need for laboratory skills*

As part of this project, a literature review on the subject of laboratory skills and the national picture was undertaken. It is clear that the need for an open laboratory skills course is still appropriate and timely in the UK.

The Biomedical Science team at De Montfort University have been releasing laboratory skills OERs since 2007 onto our website VAL (http://www.tinyurl.com/oerval). The rationale for this our observation from our annual "new student survey" that many new entrants to our laboratory based science programmes including Biomedical Science and Medical Science had no prior lab experience, and in 2009 that was around one third as previously reported in a HEA case study (Rolfe 2009). In an evaluation of VAL, we demonstrated that students using the resources gained a basic level of understanding of essential laboratory skills for example how to use a light microscope. More importantly using the resource claimed to boost their confidence prior to going into the laboratory. In the 2011 survey which will be published as an output of this fellowship, of 112 biomedical and medical science students responding, around 20% hand no previous laboratory experience. Most had undertaken practical work at school consisting of using a microscope and simple chemistry experiments, but use of more common undergraduate science techniques for example performing serial dilutions and using a range of pipettes was not widely experienced.

"A lot of titrations and buns and burner experiments. Very difficult".

"Titrations, used microscopes, handled various chemicals".

Interestingly, this picture is recognised nationally, and similar initiatives are underway to support student transition into chemistry (Lowe 2012) and a range of STEM subjects (science, technology, engineering and mathematics) (HEA STEM 2012).

The longer-term concern is that skills shortages in STEM may threaten technological advances and innovation in the UK. The Association of British Pharmaceutical Industry (APBI) identified the following as "major issues" in science graduates in 2008:

- Basic mathematical capability
- Practical skills
- Ability to apply scientific and mathematical knowledge

The Confederation of British Industry (CBI) 2010 report stated desirable graduate attributes as:

"They will have good workplace experience, along with excellent laboratory and technical skills" (CBI 2010).

In their more recent report, the CBI still claim that STEM graduates are not meeting business needs with 40% of those businesses surveyed finding it difficult to recruit high quality graduates not just in terms of scientific knowledge and skill but professional "employability" skills including time management, team working and problem solving (CBI 2011). My observation is that graduates often have these attributes but just do not recognise them nor effectively communicate them to prospective employers.

The potential target audience for VAL amongst science undergraduates is large – with around 1 in 5 (100,000) new students each year studying subjects allied to medicine / physical science and biology based courses (UCAS). Most will contain core elements of laboratory investigation so the potential for reuse of OER is huge not just nationally but internationally.

2. *What is the global perspective?*

VAL is embedded within teaching practices at De Montfort University, and by viewing the Google Analytical data it is clear that several other UK universities and professional bodies also contain the hyperlink on their websites. Additional survey data provides an interesting picture of who the interested global community is. Each OER is accompanied by a link to a brief user survey hosted on Survey Monkey and there have been 67 responses to date.

Who is using VAL?

A stay at home mom. Daycare provider. Student. Trash collector. Accountant. Lifeguard. Unemployed.

Most users of VAL are over 25 years of age, and have a positive and informative experience. What is their motivation for using it?

"My teacher told me".

"Just to see what it is all about and try to get an understanding of it".

"I always wanted to know how a microscope worked (Trash collector)".

The analytical data provides a picture of use and reuse. Annually there is around 20,228 visits (i.e. from individual workstations) and 20% of these are visitors returning two times or more. VAL is accessed from around the Globe – with clear exclusions including China and Africa. Top countries include: UK, USA, Australia, Canada, India, Malaysia, and Singapore.

VAL is not search engine optimised having had no keyword optimisation, back linking or social networking strategy as described for other De Montfort OER projects (Rolfe and Griffin 2011a, Rolfe and Griffin 2011b), but because VAL is now becoming established and authoritative being 5 years old, a large number of visitors are finding the site organically using search terms including "Beer's Law", "serial dilution" and the phrase "what is a spectrophotometer".

In fact, type in "what is a spectrophotometer" into Google and VAL will appear third and behind Wikipedia (tested on 28th June 2012) but this ranking will fluctuate depending on the activity and success of other websites.

3. OER Discovery and Reuse – not really open for business!

A good starting point for those wishing to search for OER is the guide to finding OERs produced by L McGill (McGill 2011). However, with the increase in numbers of national and international repositories, repositories managed by individual universities and other sources of OER, finding materials can be a lengthy task. We know from our analytical data that most of our science OER users retrieve materials through a simple Google search and on the whole are not entering the website VAL though being "referred" by other repositories such as Jorum. A useful role of the former HEA subject centres like the Bioscience Centre was to provide a "gate keeper" to OERs and advise on subject-relevant approaches to open practice, but today, those wishing to use OER are instantly faced with a challenge of where to look, and for the most part the emerging picture seems to indicate that they find materials serendipitously through the search engines.

As previously discussed, for OER activities to be sustained and grow, these new practices and approaches need to become part of people's daily activities (Atkins, Brown, and Hammond 2007; D'Antoni 2008), so OER projects should consider how discoverable their materials are via the search engines, and particularly Google which facilitates the vast majority of internet searches.

Belshaw (2011) raised some interesting views regarding how OER should be shared and released not just with local users in mind but as part of wider global communities. We have shown how OER can be disseminated through informal channels including blogs and social networking, and are also of the belief that OER should be hosted in a number of places with a hyperlink back to the original OER including important copyright and technical information (Rolfe and Griffin 2011a). By employing the online marketing strategies of search engine optimisation (SEO), simple daily tasks can be built into projects to further distribute OER to both general or targeted subject-specific audiences (Rolfe and Griffin 2011b).

In the current project, a search for existing on-line lab skills resources was completed, and in an initial sift, those without Creative Commons licences were discarded. A number of science resources were retrieved from Jorum and this raised interesting questions about the actual "openness" of these resources.

OER uploaded to Jorum are often technically constrained!

It was interesting to observe that of the OER found on Jorum, much was not reusable due to file formats being restrictive. A bank of multiple choice questions was released using QuestionMark Preception – a commercial eAssessment solution with associated licence costs – and these were not available in any other format even a simple Word document that would have allowed the questions to be reused.

Other materials were SCORM packaged for uploading to a content management system, so valuable content could not be retrieved. Other OER were produced in Articulate Presenter and my present institution previously licensed the use of this software but no longer does. Articulates files are also not viewable on the Apple iPAD.

A number of existing VAL resources were adapted and re-released containing updated titles and credits. Images were created in Adobe Fireworks and published as "GIF" files and imported into Pinnacle Studio for the updating of video files. These were then published as the best quality MP3 files possible, and uploaded to the HALS website and onto YouTube for discovery. YouTube videos were then embedded into the Moodle courses.

A number of Flash animations originally published in Flash CS3 were also updated and re-released using Flash CS5. This was fine for basic animations, but those containing buttons and interactive elements required recoding to update the action scripting which had advanced from AS2 to AS3. The potential adaptation of complex files such as Flash animation is not an easy option even for those with the software experience, and this certainly would not be an option for any other user.

4. *Exploration of OER granularity and diversity*

VAL currently is a website housing separate "bite sized" chunks of learning – how to use a light microscope, how to use a pipette. Most resources are contained within a series of web pages linked by a navigation bar.

The OER movement argues for objects of different granularity, but what is the evidence that assets (individual photographs, text, media files) that might go to make up a "digital object" or "learning object" are being reused or are indeed useful at all?

Such questions are difficult to answer partly due to the difficulty of retrieving such download data. What is interesting is looking at page activity it appears users aren't working through the resources page by page but are jumping around. One could argue this is the purpose of an OER to provide choice and flexibility, but how effective is the learning experience, whether it is a member of the public looking out of curiosity or a serious learner?

More important is the diversity of formats ensuring interoperability across platforms, browsers and operating devices, and also to ensure maximum accessibility for all learners and users. In a report to the Hewlett Foundation regarding a review of the OER movement, ranges of granularities are advocated and resource diversity in terms of format mentioned (Atkins et al 2007), but there has

been little further reporting on the best approaches to date.

5. *Open resources versus open courses?*

As the open education movement has grown globally, there is an emerging picture regarding the form that OER should take. There is a growing interest and increasing numbers of websites and services providing short courses and lessons. The Khan Academy (http://www.khanacademy.org/), TED ED (http://ed.ted.com/) and Moodle the open source content management system used by many schools, colleges and increasing numbers of universities has Moodle Commons (http://moodlecommons.org/) for sharing courses that are uploaded into Moodle.

Perhaps the notion of a packaged course gives people more confidence in the quality of the material? Perhaps people are time-limited and want complete materials rather than having to repurpose?

The open education community have explored the notion and importance of reuse and adaptation as important prerequisites for an OER to achieve, but it may be, that users aren't fundamentally going to deal with OER in this way, and in fact, most users and casual learners and even educators would prefer a complete course that contains content, assessment and provide a rich knowledge gaining opportunity.

6. *Course construction and delivery*

In the present project the OER (lab skills videos, animations etc) were packaged into short courses using Moodle. De Montfort students using VAL and learning laboratory skills generated MCQs which were in turn released as OER. These open educational assessments were used both formatively and summatively. Moodle users were required to register a new account, and although this itself might be a barrier to the accessibility of materials, it is a pre-requisite for using the system.

The design of the course was given careful consideration, particularly with regard to how to embed multiple choice questions and feedback, and for what purpose. The constructivist theory suggests that the past experiences of learners is important, and this is used to construct information rather than simply digest new content and take it on board (Dogru and Kalender 2007). It was therefore decided that learners would take a short pre-test to surface their prior knowledge and to serve the purpose of gaining an idea of what to expect in the forthcoming OERs. Students then worked through the OERs in a sequential manner, and Moodle facilitates this by allowing the course author to not make items active until previous steps have been completed. Learners then tested their knowledge gained in a final post-test.

Consideration was given to the notion of providing feedback. It was decided that students could take the post-test twice, and this would form their final score. At the second attempt, feedback would be provided with signposting to content should a question be wrong. Assessment is also an important part of the learning process, and theory has moved away from "assessment to support learning" to thinking "assessment is part of learning".

To facilitate discovery of the courses, the Biology Courses website is designed to provide university taster materials to prospective students, and so the navigation from the first page directs users into the Moodle course. Social networking and additional publicity surrounding the courses should hopefully attract global users, and direct marketing of subject specialists and students should also assure use. Moodle offers an additional opportunity through Moodle Commons where educators producing courses can share them under Creative Commons licences back with the learning community. This is also being explored as a route of distribution.

How to future-proof? An essential consideration for the future of OER discovery and course delivery has to be the use of mobile and tablet devices. Both supersede the need to have a PC and can facilitate both the DISCOVERY and DELIVERY of OER. The Open University already publish literature through the iBook store published using the iBook Author, and this could be a mechanism for the dissemination of short courses potentially? More easy would be the production of interactive PDF documents, and software such as Adobe InDesign embeds multimedia resources and hyperlinks within documents. These interactive PDF files could simply be distributed, emailed and or downloaded by learners. In fact, ordinary PDF documents containing hyperlinks to YouTube would serve the same purpose.

Another alternative is to release interactive documents in the form of magazines through the Apple Magazine Store, and these forms of digital marketing are being used by online marketing strategists to deliver content, products and services previously disseminated via websites (Dale 2012).

Therefore an additional goal of this project is therefore to explore mobile delivery mechanisms by producing an interactive PDF "Laboratory Skills Book". The book template is reused from an "open course book template" developed by John Casey of the ALTO project. This clearly sets out a framework for learning objectives, content and assessment. Our lab skills OERs have been packaged into a series of these course books – microscopy, spectrophotometry etc. These will be evaluated as a learning solution.

7. *Actions from this study*

OPEN TO USERS!

There is a clear sector need and global interest in life science open educational resources. The next step will be to invest effort in targeting and building networks and communities of users. Questions for the OER community would be:

- How to ensure OER are accessible and inclusive to all learners?
- Who are our users? General public, educators, students, professionals, all?
- How do search and discovery habits differ between user groups?

OPEN TECHNOLOGY

There are numerous technical hurdles entrenched within the OER process and within open practices. Areas for further exploration include:

- OER should be released in multiple-file formats where possible, including onto Jorum where many OERs are technically constrained and even unusable. What file formats are preferred? What are most open?
- OER should be accompanied by instructions on how to utilise for example upload to a content management system.
- OER should be accompanied with a clear statement of how to comply with the license terms – if you want me to attribute then what? If you want me to share alike, what should I do?
- OER producers should be mindful of the technical expertise of the user and their ability to reuse and adapt the materials.

REFLECTION – what was learnt during the fellowship, how thinking changed, usefulness.

(TOP)

Learning and teaching

Through this fellowship I have learnt about education theory and evolved an online course design based on structuralist approaches. The project has allowed me to become familiar with Moodle – the open-source content management system widely adopted in UK schools, colleges and universities. Within Moodle, particularly the use of eAssessment as a pre-test and post-test has helped me see the value of assessment not just for gauging learning gained, but as an intrinsic part of the learning process. The pre-test ensures the user has assimilated prior knowledge, and provides some degree of expectation. The post-test does provide performance feedback, but more tailored feedback and signposting to content that was misunderstood is also a useful learning step.

Open education

My thinking has changed in a number of areas. I made assumptions regarding the users of OER, but in fact, use extends beyond the institutional-based education community with members of the public and causal learners using materials. Measuring impact of OER is not just about tangible educational advances, but also the ability of OER to enhance enquiry and curiosity.

The fellowship has made me think of which forms of OER - granularities – are most useful? There is little evidence to suggest from our projects that users are adapting and repurposing, but does that matter? People want easy to use and complete quality content. It is essential that all OER released is clearly titled and credited to enable users to judge the quality and relevance of materials, and where possible, OER should be released with copyright and technical instructions to encourage use. All barriers must be alleviated at all stages.

There are still many barriers entrenched within open education practices and should the end goal be sustainability and growth of the movement, then these barriers need to be considered. Open education is not just about delivering content and resources, it is about meaningful and effective dialogue to create genuine learning opportunities.

DISSEMINATION
(TOP)

The OER, projects, research outcomes are all disseminated through our OER websites. These are search engine optimised and use social networking strategies to distribute OER and news via blog articles and RSS feeds. Posterous, Facebook and Twitter are regularly used.

Two papers relating to VAL and our other UKOER3 project were presented in April:

STEM Annual Conference, Imperial College London, April Viv Rolfe and Mark Fowler. Building external partnerships to support STEM education opportunities. Presentation. http://www.slideshare.net/viv_rolfe/v-rolfe-stem-2012-employer-engagement-in-oer-12april2012

OER12 / OpenCourseWare Conference, Cambridge UK, April.

Viv Rolfe and Simon Griffin. Using Open Technologies to Support a Healthy OER Life Cycle. Presentation.
http://www.slideshare.net/viv_rolfe/v-rolfe-oer12-conference-search-engine-optimisation-17april2012

A paper has been accepted to an International conference in July 2012.
SLOAN Consortium Annual Conference. The 5th Annual International Symposium for Emerging Technologies for Online Learning, Las Vagas, July. Presentation.

There will be a minimum of two research publications arising from this project anticipated to be ready for submission to journals by December 2012.

CONCLUSIONS
(TOP)

Exploring the notions of open technology to support the discovery and use of OER is essential to a healthy life-cycle. This is not only to ensure sustainability and growth of the so called OER movement, but from a practical standpoint we have a duty to ensure OER shared are truly accessible to all learners whatever their educational goals are.

A number of technical solutions and considerations have been proposed (Rolfe and Griffin 2012) particularly to facilitate OER discovery via the Google search engine. In terms of laboratory skills resources to meet the needs of the science sector, there is a strong need for high-quality laboratory skills resources to support student transition from school and college, to - and through university, and much of the impact of this SCORE fellowship project will only come to light in years to come, as we learn more about our users and the impact that the resources is having on their lives.

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