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How OERs can help a Strategically Important and Vulnerable Subject Area - Quantitative Social Science

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Abstract: In the UK the 2010 Royal Statistical Society campaign - getstats - and the Economic and Social Research Council (ESRC) have identified a pressing need to promote the use and understanding of statistical data and quantitative methods (QM). Despite excellent research data infrastructure such as the UK Data Service, the ESRC acknowledges a QM skills deficit in UK Social Science. Attempts to improve data and statistical literacy have largely focused on developing good practice at institutional level and have revealed pockets of excellence in UK social science departments. Investment at the postgraduate level has resulted in progress in 'capacity building' for researchers, and attention is now turning to the undergraduate level.

The work reported in this paper is the result of a project - 'Sharing OERs for Statistical Literacy using Real World Data' - funded through the Open University's SCORE (Support Centre for Open Resources in Education) initiative. The project adopted a case study approach to investigate the use of real world data in social science teaching of quantitative methods (also referred to as quantitative skills) as part of research methods training. It focussed on teaching at the undergraduate level, and on the social sciences excluding psychology and economics. The methodological task was to find practitioners willing to discuss and share their experiences of using real world data in this environment, and to explore their approaches to sharing resources. The population from which interviewees were drawn was therefore restricted to those already engaged in this endeavour. Consequently the case studies were selected from those given the tasks of quantitative methods teaching, possibly marginalized through the 'quantitative/qualitative' split that is evident in UK social sciences, and thus those who have *the task of engaging the largely disengaged*. Other players in this space, notably policy practitioners, workplace trainers and academic support staff, were also included, though to a lesser degree, in order to look beyond the teaching of QM, and to connect to the wider issues, especially the employability of graduates with quantitative skills.

The paper describes the approach taken, summarises activities undertaken, and provides a series of case studies showing differing perspectives of engaging with statistical data and methods. Evidence of the benefits of sharing open educational resources reflecting real world examples that support the development of statistical literacy are presented, and the barriers to sharing

also discussed. Further areas for research and practice are also identified.

Keywords: Statistical literacy, quantitative methods, social sciences, employability, real world data, quantitative skills, Open Educational Resources.

Background

OER

The use and reuse of Open Educational Resources (OER) has attracted significant attention since the term was coined by UNESCO in 2002. Nonetheless, whilst significant amounts of activity, and funding, have been directed at the OER movement (see for example Stacey, 2010) it is still some way from being mainstream; early adopters and advocates may argue that significant movement has been made in the right direction (Kernohan, 2012) whilst others think that these initiatives have failed (Cann, 2012). White and Manton's iceberg metaphor for use and reuse of teaching resources describes the practice 'above and below the water line' (White and Manton, 2011). Activity undertaken in the UK's JISC and Higher Education Academy OER Programme shows, unsurprisingly, that sharing does take place at subject level, where communities of pedagogic practitioners talk to each other about the teaching of their discipline (see for example OER Synthesis and Evaluation Report at https://oersynth.pbworks.com/w/page/42051418/Phase2%20Cultural%20Considerations).

OER initiatives continue to attract policy attention internationally, with the launch of UNESCO's 2012 Paris Declaration (UNESCO, 2012) and the policy initiatives for OER uptake being recorded in international registries (http://www.poerup.info/ and http://wiki.creativecommons.org/OER_Policy_Registry).

Quantitative Skills

Over a time period, a parallel activity that has attracted policy attention is the teaching of quantitative skills in UK university social science courses. Quantitative Skills in Social Sciences has been designated a 'strategically important and vulnerable subject area' (Hefce, 2012; Britac 2011). In October 2012 The British Academy published a Position Statement, 'Society Counts', in support of Quantitative Skills in the Social Sciences and Humanities (Britac, 2012), supported by the Learned Societies and associated statistical initiatives and organisations .

The background to the so called 'quantitative skills deficit', and recommendations for addressing the problem, can be found in MacInnes (2009), but the stark message that forms the backdrop to the work reported in that paper is captured here:

'Perhaps most important of all, an inability to handle quantitative information critically weakens graduates' capacity to be active, aware, informed citizens. No public debate of any importance takes place without a mass of accompanying statistics. Few of these may stand up to rigorous scrutiny. The kinds of skills good QM course can impart are fundamental to citizens' ability to distinguish strong from weak evidence in virtually any sphere of life.' MacInnes 2009; p.10

The Royal Statistical Society launched the *getstats* campaign on the 10/10/2010 to raise awareness of the benefits of statistics to all sectors of society, schools and higher education, media and politicians, employers and the wider public (getstats 2010). In 2012 The Economic and Social Research Council and the British Academy funded a three year programme, through a group of twenty

projects, to address quantitative methods taught at undergraduate level in the social sciences. There is thus significant focus on producing more statistically literate students and citizens in the UK.

Real World Data in Teaching

The richness of the data landscape available to social science students, demonstrated through the ESRC funded social and economic data infrastructure, the UK Data Service (ESRC, 2012a), means that this may be a golden opportunity to encourage both QM use and the sharing of OERs among academic communities of practice. Certainly the data deluge (Thornton, 2011) ought to mean that there has never been a better time to get students to engage with real world data (Carter et al., 2011). Work in this combined space between 2008 and 2011 has resulted in a series of case studies and research outputs that provide evidence of the benefits of using real world data at the undergraduate level, including acquisition of employable skills (Carter, 2010; Carter *et al*. 2011).

Aligning these Agenda

The juncture of these 3 disparate activities - OER, Quantitative Methods teaching at undergraduate level, and a focus on real world data for engaging students to explore global problems - provided a research opportunity. The national learning and teaching repository service - Jorum - which assists in the finding, sharing, management and support of OER use and reuse, as well as gathering narratives of the value of sharing openly, provided a further opportunity to share any OER discovered as a result of the activity undertaken. A successful funding application to the Open University's SCORE initiative enabled the project 'Sharing OERs for Statistical Literacy using Real World Data' to build on former work, and provides the context for the work reported in this paper.

Introduction

The project was carried out between April 2011 and May 2012; it is described athttp://www8.open.ac.uk/score/fellows/jackie-carter with selected outputs available at http://www8.open.ac.uk/score/outputs.

This paper describes the approach taken, summarises activities undertaken, and provides a series of case studies showing differing perspectives of engaging with statistical data and methods. Evidence of the benefits of sharing open educational resources reflecting real world examples that support the development of statistical literacy are presented, and the barriers to sharing also discussed. Further areas for research and practice are also identified.

Activities

The project set out to find examples of statistical data users across the sectors of society covered by the *getstats* campaign. Although predominantly focussed on Higher Education (HE) the project also provided an opportunity to engage with policy related practitioners, as well as media professionals in search of stories extracted from the increasing availability of open data.

A case study approach was adopted throughout the project to investigate (i) the use of real world data in social science teaching of quantitative methods with a focus on the undergraduate level; (ii) additional support available for academics and students; and (iii) to understand the value of statistical literacy to policy practitioners. The methodological task was therefore to find practitioners willing to discuss and share their experiences of using real world data in these environments. The population from which interviewees were drawn was therefore restricted to those already engaged in this endeavour. Consequently it

selected case studies from two key areas: firstly from those given the tasks of quantitative methods teaching, possibly marginalized through the 'quantitative/qualitative' split that is evident in UK social sciences, and thus those who have *the task of engaging the largely disengaged*; and secondly those using statistics in their policy related work.

Semi-structured interviews were conducted with nine teaching academics at five UK universities. These were selected from responses to email requests for interested teachers through the Quantitative-Methods-Teaching list (quantitative-methods-teaching@ncrm.ac.uk).

To gather evidence on the perspectives of related players in the wider QM space, interviews were also conducted with a university Social Science Librarian, and a policy practitioner who uses statistics in his role as UK Policy Advisor for Save the Children.

Additional activities undertaken included an interview with the Director of The Royal Statistical Society (RSS) Centre for Statistical Education (based at Plymouth University, http://www.rsscse.org.uk/), and attendance, with 5 journalists, on a BBC's School of Journalism training course, entitled 'Sources, Scoops and Spreadsheets'. These activities set a wider context for the work reported here, for example the RSS getstats campaign is working closely with the media and assisting in training journalists (http://www.getstats.org.uk/resources/journalists/).

The project enabled attendance at multiple related meetings, which informed the research context, including:

- an ESRC/British Academy organized event on Quantitative Skills in the Social Science Learning Lessons from Overseas (April 2012) at which David Willets (Minister for Universities and Science) presented;
- an ESRC/British Academy organized event for the start-up of 20 projects funded over 3 years (2012-2015) as part of the ESRC/BA Quantitative Methods Curriculum Innovation/Researcher Development Initiative (*ESRC* 2012b)
- 2 day workshop on teaching QM to undergraduates (QANTAC) - one of the ESRC/BA funded projects on teaching QM at undergraduate level
- 2 day HEA organised Summit on Research Methods teaching in the Social Sciences.

Case Studies

Case Study 1: Academics' Perspective

The first case study provided here is taken from a UK university large social science department. Four lecturers kindly agreed to be video-recorded and the quotes below are extracted from those interviews. They explained that their approach to teaching quantitative methods is currently changing, that 2 of the lecturers are new and have been brought in to help address the QM skills deficit at undergraduate level, and they are at the start of a journey to address this agenda. Their willingness to be interviewed and recorded reflects the open and reflective manner in which they are inspecting their own teaching methods and sits well with the philosophy of open education.

All the lecturers are located in the School of Social Sciences; three are sociologists, one a political scientist (though not teaching his substantive subject). All four teach QM, as part of research methods courses, and all use data across the levels including with undergraduates; this varies from using data they collect themselves to available secondary data resources from the UK

Data Service (formerly the ESDS - Economic and Social Data Service) and other sources. As one said:

'partly it's about trying to get people to think about using secondary data rather than just getting them to do a survey themselves, and partly it's about giving them some data that's sufficiently large enough and robust enough to enable them to calculate a statistic'

One of the interviewees, the political scientist, talked about their own experience of 1+3 post graduate studentship (one year of Masters study followed by three year PhD), as a result of which they had gained valuable data handling experience, and crucially access to lots of data, including *'longitudinal electoral data linked to geographies and large scale survey'*. As a result they felt that they had

'relied solely on my transferable skills'

in coming to teach quantitative methods at the university. This lecturer tends to use their own datasets in lectures, but gives the students exercises based on readily available data, the rationale being that they introduce the concepts and students then get to work with real data that they haven't seen before. The issue of transferable skills is picked up later in this paper.

When asked about using global data, one of the respondents talked about getting students to look at local *and* global data (IPUMS International and World Values Survey) and macroeconomic data for multiple countries

'so students get a real view of where Britain sits in a global context….it captures their imagination.'

The same lecturer also uses census data to look at change over time, for example how ethnicity has changed in the UK in the last 30 years, although there was some debate about the value of these data due to their contemporary and developing nature. The lecturer who uses census data talked enthusiastically about a news story that had broken the previous day about self-reported ethnicity by generation, and had already decided to build this into her teaching as a way of getting students to think about a substantive subject and explore it with data. (This story covered by Mark Easton from the BBC http://www.bbc.co.uk/news/uk-15164970 used data from the UK Household Longitudinal Study - UKHLS).

The group discussed what appeared to be a 'disconnect' between teaching the method, e.g. how to do a Chi Squared test, and using quantitative data to explore a substantive problem, with some students reporting that they don't see the point in the former as they don't want to be a researcher (the course referred to was a core course for all 1st and 2nd years). The university is addressing this by

'trying to make students aware of the potential benefits of knowing quants, to use in their substantive area'

and giving students an opportunity to express their fears and frustrations about the use of abuse of statistics from the outset, but supports them throughout- and especially in the early stages - in terms of their use of data and statistics. The interviewees admit this is only a partial solution though and there is a way to go, not least because this level of student support is very time consuming. Their approach this year, as a result of new appointments, has been to try to do two things (i) to cater for all substantive areas covered in a generic methods course by using numerous examples from different substantive areas to keep all

students engaged and (ii) to get rid of as far as possible the 'quants' and 'quali' labels (for quantitative and qualitative methods that pervade the social science disciplines) as this is not helpful; instead they are focussing on *research design* and *how to become a social scientist*.

This hands-on approach is designed to let students engage directly with data. To let them *'get their hands dirty with data'* in order to appreciate that it generates an improvement in practical not just a theoretical skills. As one of the group said,

'you don't learn much about research methodology by just reading books and writing essays, you do have to go out and collect some data, and you don't really appreciate the craft of quantitative methods until you do a bit of recoding and see what difference it makes'.

The group discussed the value of quantitative skills appearing to become more apparent to students as they get closer to graduation, even though QM are introduced early in the degree scheme. There was some discussion not only about how students can critically engage with the literature if they can't understand it, but the same applying to staff. The university is now introducing joint supervisors on students' dissertation projects in order to address the shortfall in QM skills among staff as well as students.

There was a short discussion on skillsets and attitudes to QM learning that social science students bring to their undergraduate studies. In an ideal world students would not have the 'allergy' to maths and stats that is commonly reported; on the other hand students tend to enroll on social science degrees thinking they will not have to confront numbers. Consequently there was agreement on the need to 'get them young' and the desirability of working with schools to help students understand the need to engage with number and data even before they get to University. More than one of the group felt that universities have to give remedial help to students to give them some basic skills to get started, though others commented that this is a result of many students having not studied maths since the age of 16.

When asked if they would consider sharing some of their teaching resources in open repositories such as Jorum, there was reluctance. They felt that because their teaching approach is changing to address the need to change the curriculum it was too early to share resources, and there was a sense of disbelief that others would find them useful anyway. Nonetheless they all thought sharing resources was a useful endeavour, and they were willing to consider this in the future.

As a direct result of this work, however, one of the academics from this institution proceeded to share his resources through Jorum, and was willing to provide a narrative to chart his journey from being sceptical about sharing teaching resources to embracing this as a method for developing his teaching profile. The *Jorum user story* (http://www.jorum.ac.uk/squeezy/cms/media/3sswj4pqm3ms.pdf) provides a case study of how academics need to have time to think through the benefits of sharing resources on the open web. The following selected quotes show how this academic progressed through a series of personal steps before he felt able and willing to share, but the rewards to him are now evident.

'my first reaction to sharing was one of horror'.

'After my initial reluctance I started to think more reflexively about sharing resources.'

'Context is everything in Quantitative Methods teaching and …I was almost certainly going through the same laborious process that hundreds of lecturers before me had gone through. Why were we replicating this process in isolation? Think how much time we could save if we pooled resources.'

'I realised that actually I was quite proud of my resources and that, as well as criticism, there was also the possibility that I would receive positive feedback. …there is a parallel with publishing - if you do good work then it gets read and you start to build your reputation….why wouldn't you want to show off your resources?'

'this only works if no-one can …claim them as their own…Once I understood the terms of the Creative Commons licenses and the protection they gave my resources, I was sold'.

'..you want to describe and tag your resources so they get maximum exposure. If you do it right your work will turn up high on Google searches (I've already had people tell me they found my resources via Google'.

'I've received several comments on my materials - all positive - which suggests that there are plenty of people out there who were suffering in isolation as I was'.

'I've been told that colleagues at other institutions now reference my work in their lectures - which demonstrates the value of exposure and the benefits of the CC license.'

'My materials are licensed in such a way that anyone can access, use and repurpose them as long as they credit the resource to me. However I also stipulated …that any derived works must also be deposited…. thus we are starting to build up a critical mass of open access materials that will snowball as more people get involved'

'I will continue to deposit my resources [in Jorum] and link to them via academia.edu and other websites that contain my profile'

The initial reluctance ('horror') to sharing resources openly, as described in this case study, reflected a general response from academics interviewed through this project. This aspect, as a key barrier to sharing resources, is discussed in the Findings, Reflections and Future work section below.

Case Study 2: An Academic Support Librarian's Perspective

The second case study is developed from an interview with an academic support librarian from a UK university. This demonstrates the role of support staff to students who are required to use real world data in their studies. The data referred to in this case study is made available through the UK Data Service (formerly the Economic and Social Data Service) which has a dedicated Helpdesk and website, and data experts who provide user support and training. Some data are available on open access, others through authentication. All universities in the UK have access to the data which are available freely at the point of use. This case study was not intended to surface existing OER, but rather to consider the role of other players in the support process who could contribute to the development of supporting materials that could be used to help students find suitable data for undertaking quantitative analysis in social science courses.

The interviewee - an academic support librarian - does not teach but provides support for students at the university, in economics and law and also for anyone who may want to use data in the social sciences. The most frequent use of

socioeconomic data in teaching is in economics, but politics and sociology and criminology students are also being encouraged to use data in projects, and sometimes engineers seek help from the library too for this type of data.

"[economics] undergraduates do a dissertation in the third year which [shows] that they have learned what to do with data over the preceding 2 years. They have to go and find data….probably the most popular dataset is the World Development Indicators from the World Bank because it's so big and covers such a good mix of social and economic indicators and some financial stuff…'

She is talking with her business librarian colleagues about creating online tutorials to support students who want to use data in their third year dissertations. This will be a useful way to replace what is currently given to students and tutors as a guide, and will enable students to find data of interest very quickly, and at a time that suits them.

The librarian's background is not in data or social sciences but history, and indeed she used to avoid the work with figures in, commenting 'I never thought I'd do this'. In a previous role she worked in the House of Commons library supporting government statisticians (when data was available in printed reports only), during which period she learned about what data series exists, British and International. She said

'it taught me, in the process of supporting them, where they looked for data, and taught me some of the things students (now) need to know, like comparability. It was a good experience'

She noted that students requirements for data are wide and varied, governed by their research topic, but some of the more common queries are around social and economic data, such as GDP per capita combined with educational indicators, for example how many years children go to school in developing countries. Her role is very much about offering support for students who have a substantive research question, but don't always know where to start looking for data, or what data exists to help them with their research. Students ask for data on a wide variety of topics including poverty, social capital, trust, happiness and conflict. She offers a local source of help for students, but is able to draw on the data service which she values highly both for the expertise offered through the Helpdesk, the value of providing data through a single interface and the very good online help on the website. Students require differing amounts of support:

'Sometimes when you've pointed them [at ESDS] they go off…. Sometimes they need an appointment to sit down and show them how it's done. I point them at ESDS because they might want other data and the common functionality really helps'.

For methodological or statistical help the students turn to their tutors. She offered to speak to some of the lecturers about sharing their use of data in teaching.

This case study indicates how librarians provide an important service to academics and students through assistance with the knowledge of where suitable social and economic data can be found for secondary analysis to support their research question. This librarian spoke about the planning of development of online tutorials to assist students in discovering data. This could be a very useful resource, and if shared as OER could benefit students in other universities too. She did note however that the methodological and statistical issues would need to be supported by academic staff.

Case Study 3: A Policy Practitioner's Perspective

The third case study is drawn from an interview with a policy practitioner - the UK's Policy Advisor (Poverty) for Save the Children. The purpose of this was to understand the role of statistics and quantitative analysis in a real world context, and to elicit how the postholder had acquired the skills to enable him to use statistical data persuasively, and the benefits from so doing. The intention here was not to release OER (as teaching resources) but to assist in gathering evidence that could be used with undergraduates to help them understand the benefits from acquiring these 'lifeskills'.

The interview revealed that the role required a certain level of statistical knowledge to be able to produce policy reports and recommendations. The practitioner did not have the full extent of this knowledge and understanding when he graduated from his first degree, though he quickly identified the need for this to enable him to apply for the policy related roles that he wanted to undertake:

'I wanted to develop research skills, including quantitative…at least to be able to understand statistics to a level…to help me career wise'

Having undertaken a largely non-quantitative first degree in social science, he sought a Masters course that would give him the skillset he was lacking. As a result he undertook a Masters in Quantitative Research Methods which he said enabled him to do the role he is now in.

'This job requires a certain level of confidence and ability to interact with the statistics.'

The interview discussed the value of statistical knowledge, and the need to be able to analyse and interpret statistics - in this case on child poverty - in a way that can have maximum impact for the charity's work, in the media. He commented that,

'You need to think about how to manipulate [the stats] in a way that's media friendly….Statistics are impactful.'

Save the Children received significant media interest in their child poverty policy reports, based on statistical data analysis, released in 2011. In particular the development of statistical methods to demonstrate the effect of poverty at local, not just national, levels has been particularly powerful, and led to a large number of media interviews and reports. Examples of these (shared after the interview) are listed below:

- The Guardian: http://www.guardian.co.uk/news/datablog/2011/feb/23/child-poverty-britain-map
- The BBC: http://www.bbc.co.uk/news/education-12544372
- Extensive coverage in the MEN: http://menmedia.co.uk/manchestereveningnews/news/s/1408942_manchester_named_child_poverty_capital_of_britain_with_25000_grov

As a result of the interview reported in this case study this practitioner presented to University of Manchester undergraduate students about his work (recording at http://stream.manchester.ac.uk/Play.aspx?VideoId=10926) and gave the plenary talk to the Methods@Manchester Methods Fair 2012 (slides available at http://www.methods.manchester.ac.uk/events/2012-10-10/documents/GrahamWhitham.pdf).

This case indicates the enormous value in finding real world applications of data (in this case the Households Below Average Income (HBAI) data released by the Department for Work and Pensions) for policy relevant research. Presentations of the type reported above could be hugely valuable for demonstrating to reluctant students the advantages of acquiring this skillset.

Findings, Reflections and Future Work

The following key themes emerged from the case studies presented. Where other work undertaken during the project contributes to these findings, references are also made to those activities.

Real world data has value for quantitative analysis of global issues

All case studies reported here show the enormous value to students and practitioners of access to reliable sources of data for analyzing real world issues. There is however a balance between helping students to collect data themselves and giving access to authoritative data sources, and in providing good examples to students that can help them focus on the substantive problem (e.g. poverty alleviation) without being overwhelmed by the method or tool used for the analysis.

The following provide some examples of *data driven resources* being shared, or courses being developed, to investigate global issues:

- 'Using and Sourcing Secondary Data' slides by Dr Luke Sloan shared in Jorum as a result of this project: http://dspace.jorum.ac.uk/xmlui/handle/123456789/16069
- LSE Case Study at http://www.esds.ac.uk/resources/datainuse/casestudyteaching.asp?id=18 which refers to the LSE 100 Course: Understanding the Causes of Things. LSE do not share teaching resources under open license but would consider opening content as it became less current (for example previous set exercises). (http://www.lse.ac.uk/resources/calendar/courseGuides/LS/2011_LSE100.htm); and
- Teaching with Economic and Social Data at http://esds.ac.uk/resources/teaching.asp (teaching data sets, teaching case studies, research methods). All content are available on the open web, though not licensed through Creative Commons.

Examples of statistics in disciplinary contexts

Discussions often centred on the need to have examples to engage students with their substantive discipline, in other words to make the examples relevant to their subject. This is time consuming for lecturers, and whilst the academics interviewed here were sympathetic to this they also recognised this requires significant effort.

Where sharing has occurred through open licences this has tended to be as the result of projects funded to create and/or release materials (such as the excellent Methods.Hud resources curated by Graham Gibbs (http://methods.hud.ac.uk/) under a JISC/HEA project, the DeSTRESS (DESTRESS is a Depository of Resources for Statistics in the Social Sciences) resources also funded through JISC/HEA at http://destress.pbworks.com/w/page/42308116/Welcome)

A bank of resources of 'statistics in the news' could be especially useful here; this could be co-created by lecturers, students and policy practitioners, and perhaps also the media. Some practice is emerging in courses but sharing of these examples is not yet widespread as this project has shown. Nonetheless there is a growing appetite for this, and exercises around practical use of data

across the social sciences could further support this. The RSS could help in this regard, as could possibly the BBC through their data journalist training. The getstats goodstats web pages (http://www.getstats.org.uk/category/goodstats/) are a step in the right direction but more needs to be done to present this information as reusable teaching resources. With the growing interest in Open Data (including data.gov.uk and The Guardian's datablog and DataStore http://www.guardian.co.uk/data) there may be an opportunity afforded here through collection of good examples of statistics to illustrate exploration of social issues, but for this to work well as a resource base for Social Science courses it needs to be a two way dialogue between academics and the media.

Quantitative skills are transferable and support social scientists' employability

The evidence surfaced through this project on the value of the transferable skills developed through use of statistics and data analysis in social science subjects, further supports the argument to provide opportunities at the undergraduate level to give students experience required by employers. One of the lecturers in the first case study spoke about the contribution this made to the role he is now in, and is already a success story for that research council's investment. The transferable skills developed by students using statistics at both undergraduate level (e.g. in dissertations) and postgraduate level have been reported in all the interviews in this project (adding to reports elsewhere, e.g. Carter 2010, MacInnes 2009). The interview with the Policy Advisor at Save the Children made the link between university education and a policy role in the real world explicit. Developing opportunities between practitioners in real world, policy relevant, occupations and university students could be an excellent way to 'make it real'. The presentation by the UK Policy Advisor for Save the Children at Methods Fair 2012 (Methods@Manchester) invited more interworking of this nature, and reflects Nuffield's desire to create stronger links between academia and the workplace (Nuffield, 2012).

Sharing QM Open Educational Resources - the start of a critical mass?

Although the project encouraged individuals and institutions to share their OER with the sector, few resources were shared as a direct result of this activity. Direct sharing did occur as a result of Case Study 1, both through sharing of OER in Jorum as well as the development of his story 'Learning to Share' reflecting his journey to share, from 'initial horror' through to 'I will continue to share'. Understanding at first hand academics' reluctance to sharing, in fact helped re-focus the project to turn from persuading individuals to release content under open licences to instead contribute to influencing policy and practice in the QM environment.

Although the project specifically targeted pockets of best practice, initial fieldwork (conducted through liaison with communities of practice, learned societies and professional bodies) made it clear that there was actually very little practice in the undergraduate curriculum in the areas of need, and sharing of this practice was minimal. However, through the period of the contributions were made to various high level meetings and there was a noticeable change in direction regarding attitudes to sharing, and the perceived value of working collectively.

Towards the end of the project a meeting was convened by the Higher Education Academy (June 21-22, HEA Social Science Summit for Research Methods Teaching). One of the outcomes was a clear desire for this community to learn from each other, and to share resources, and a small project is to be funded to support sharing of Research Methods materials (not exclusively, but including, QM resources) as OER. This indicates that the UK Social Science community, although it has seen some success through funded activity (e.g. see

DeSTRESS and Methods@Hud references above) is some way behind sharing as an accepted practice, but has expressed a strong need to aggregate existing content and make this discoverable. The Quantitative-Methods-Teaching list is also assisting in this regard, regularly sharing links of recommended content (see http://www.esrc.ac.uk/funding-and-guidance/tools-and-resources/undergraduate-QM/index.aspx) but a comprehensive pool of QM OER are not yet available. It is to be hoped that this project has contributed to affecting this practice, and the critical mass of content to aid in QM teaching will start to become a reality.

It is heartening to see that research and related funding bodies are starting to invest significantly in this agenda. The work undertaken through this project certainly indicated from the perspective of a lack of sharing of teaching resources and practice, that Quantitative Social Science is indeed a vulnerable subject. To avoid it becoming an endangered species sharing of resources under open licence should be adopted as a matter of urgency.

Need for more digital stewards or champions for sharing to become common practice

Finding *digital stewards* (Wenger et al, 2009) or champions who understand the benefits of sharing proves a powerful and effective mechanism for embedding good practice in a community new to sharing openly. The academics embedded in a community who are willing to share their resources (and practice) were in the minority in this project, indicating that there is still work to be done to spread the message about how to share openly, and the benefits of doing so. But arguably this is an area that would see significant return on investment if small amounts of funding were made available to support this type of activity.

Moreover, the role of support staff including academic librarians should not be underestimated. Other policy important areas, including Information Literacy (Graham and Secker, 2012) have embraced the role the information professional can play in support of systematic discovery, tagging (cataloguing) and organisation of collections of OER. Quantitative Methods initiatives ignore this at their peril.

More needs to be done to understand how sharing is embraced and the steps and support needed to structure this activity. Lessons learned from other communities that have already seen success in changing practice should be shared *beyond those communities* in ways that could help short-circuit the learning needed for the QM community. For example, other designated strategically important and vulnerable subjects - Modern Foreign Languages - who have had success in developing strong Communities of OER sharers and users through LORO (http://loro.open.ac.uk/) and Humbox (http://humbox.ac.uk/) could share their success strategies and the benefits of adopting an open philosophy. One of the most significant outputs from the SCORE projects that could help in regard to understanding and supporting sharing could be the report from Wild (2012) on OER Engagement Study: Promoting OER Reuse amongst Academics. Further research in applying this framework to QM teaching could be hugely beneficial.

Summary

The aim of this project was to uncover best practice in teaching Quantitative Methods (QM) in the Social Sciences in the UK at undergraduate level and to share this through release of Open Educational Resources and narratives about how lecturers are engaging students with real world data. The context for this work was the increased attention by government and funders being given to quantitative social sciences as a Strategically Important and Vulnerable Subject.

The project delivered a series of case studies, gathered from interviewing a number of stakeholders: academics; an academic librarian; and a policy practitioner. In addition information was gathered from a journalist training course attended and a number of meetings and events organized to support the teaching of QM in the social sciences. A series of presentations were given throughout the project and the lessons learned will also be shared through an ESRC / British Academy funded project - Patterns in Politics and Society (PIPS).

The barriers to sharing content and practice were explored, and whilst there is a growing appetite to open up resources the project found little evidence of this happening, although attitudes changed throughout the project lifetime and the benefits of sharing became more obvious as projects funded to develop statistical capacity shared their frustrations. In that respect the project was ahead of its time. Nonetheless the climate looks healthy with significant investment into the sector to build up QM teaching and put the development of skills centre stage in the Social Science undergraduate curriculum (Nuffield, 2012; ESRC 2012b).

Crucially the project found that there is a need to be aware of the journey that others have to travel to get to where the 'OER savvy' are now. The following quote, in answer to a question asked at a British Council conference in April 2012, sums up the issue very well:

'I think OER is a very young concept. People who live it every day are sort of like 'why aren't more people doing it? It's still very young and it will come of age. We will look back ten years from now we will see the OER movement as the single biggest change for creating access to high quality higher education for people on the planet - most people just don't realise it yet. And where we've got to do some work is search and retrieval and application - that's still the great frontier. We're not doing a good enough job in equipping our educators to participate; we're not doing a good enough job in enabling our students to find it and do something meaningful with it'

Prof Martin Bean: *Bridging the divide: visions of education futures through technology*

The main outcome of the project is the opportunity to have brought together two interrelated, but until recently, separated worlds. On the one hand QM is striving to grow and embed quantitative skills in social science undergraduate courses; on the other OER is on the cusp of becoming mainstream. The QM world has much to gain from embracing OER from the outset. The increased availability of Open Data and the focus on Open Education (not just resources) provides an opportunity for the work started in this project to gain traction over the short to medium term. Therefore, whilst the OER released through this work have been few in number, the opportunity to influence future sharing of resources and practice has been good. It is hoped that as the initiatives funded to increase capacity in Quantitative Social Sciences mature, the volume of OER in the sector increases, and more over a culture of sharing practice is inculcated.

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