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Digital Scholarship Audit Report

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Executive Summary

Contents

Introduction

This report will describe the audit of digital scholarship practices that was carried out over the period between 2nd November 2009 and 31st July 2010 as part of the wider Digital Scholarship project. The original proposal for the project included the intention to “conduct [an] exploration of current academic researchers’ practices in digital scholarship” and this document is the result of that exploration.

The original proposal also included the following questions:

1. In what kinds of digital scholarship are researchers engaging?
2. How do academic researchers use new technologies available to them?
3. How is new technology constructing the landscape influencing scholarly practices?
4. What roles do interactions with others facilitated by social networking play in this?
5. What consequences do these changes have for professional practices of educators particularly in the Open University?

The next section will outline a definition of digital scholarship based on the model of scholarship described by Boyer, and elaborated on in a paper by the digital scholarship team (Boyer, 1990; Pearce, Weller, Scanlon, & Kinsley, 2010). The following section will outline who was spoken to as part of this audit and the decisions behind the method chosen. There follows an inductive analysis of the interview transcripts which is initially based on the Boyer framework but then encompasses the broader use of digital tools by this group. This is then discussed before a number of conclusions are drawn about the use of digital tools by this group at the OU. The final section will consider a number of recommendations for supporting the use of digital tools across the OU.

Digital Scholarship Considered

In order to answer the questions above a literature review was conducted to establish the various ways in which digital scholarship was being discussed. This

was completed and submitted as an article for a special issue of the open access peer review online journal *In Education on Technology and Social Media*, now published (Pearce, Weller, Scanlon, & Kinsley, 2010). It is worth noting the speed of publication of the article in this way (published within months of submission) versus the time scale of more traditional paper based journals which can take years.

This paper took Boyer's report on scholarship (Boyer, 1990) as its starting point. The purpose of this report was to try and establish the nature of scholarship in the US at this time, in the face of often competing demands, "a more inclusive view of what it means to be a scholar--a recognition that knowledge is acquired through research, through synthesis, through practice, and through teaching" (ibid. p.24). Boyer was attempting to establish how each dimension could be appropriately recognized and rewarded, to counter the bias towards discovery and integration that was prevalent in the US at the time and is arguably an issue in the UK today.

He went on to suggest four dimensions to scholarship: discovery, integration, application and teaching. Discovery is that element of scholarship concerned with the creation of new knowledge in a specific area or discipline. The second dimension is integration which is still about creating knowledge, but this time across disciplines, placing individual discoveries within a wider context. This is specifically related to work that is multi- or inter-disciplinary. The third dimension is application, specifically engagement with the wider world outside academia, but still based on the scholar's disciplinary knowledge and background. This might include public engagement activities as well as input into policy and general media discussions. The final dimension is teaching which includes all the administrative elements of preparation and marking that support learning and teaching. The relative importance of teaching within an academic's role is contested and variable across institutions. Within the OU the situation is different from the rest of the sector with a firm division between the creation of course materials and other teaching activities.

Our discussion took these dimensions as a starting point for an analysis of how new technologies might change the nature of scholarship. In particular consideration was given to how these technologies relate to more open forms of scholarship in each domain avoiding a simply technologically deterministic account.

"These new web based technologies are then a necessary, but not sufficient, condition for a radical opening up of scholarly practice. In this sense digital scholarship is more than just using information and communication technologies to research, teach and collaborate, but embracing the open values, ideology and potential of technologies born of

peer-to-peer networking and wiki ways of working in order to benefit both the academy and society.” (ibid)

For each of Boyer’s dimensions of scholarship we suggested a related trend towards openness which has been initiated, supported or accelerated through the adoption of new technologies. This is represented in the table below:

Table 1: Scholarship and New Technology

Boyer’s dimension of scholarship	Trend towards openness
Discovery	Open Data
Integration	Open Publishing
Application	Open boundary between academia and public
Teaching	Open Education

The creation of new knowledge often involves the creation and (re)use of data and new technologies enable the sharing and analysis of data in ways that were not possible before. However as suggested before the new technology is not enough of itself to lead to this change, and there has been a recent move towards making the underlying datasets from research more openly available which has been labelled open data (Green, 2009)¹.

The second dimension of scholarship was integration, where the discoveries of others are put into context, and applied to wider problems. There are a variety of mechanisms through which scholars publish and communicate their findings and learn about the work of others such as journal articles and monographs. Journal articles are currently the site of the greatest tension between the previous business models and newer open forms made possible through a move to digital publishing (Cope & Kalantzis, 2009). These open forms could incorporate multimedia as in the Journal Of Visual Experimentation² as well as open access, breaking down traditional subscription based models which can exclude scholars (Willinsky, 2006).

New technologies and websites such as YouTube, various blogging tools and twitter allow for a form of direct communication between academics and the general public. This can enhance the application dimension of scholarship which is concerned with engaging and including the broader public within scholarly discourse.

Lastly new technologies allow for more open forms of teaching, where the digitisation of learning and teaching resources means that they are easily reproducible and openly shareable at a global scale. The advent of MIT’s Open

¹ See <http://www.datacite.org/> and also <http://www.ckan.net/>

² <http://www.jove.com/>

CourseWare³ project in 2001 initiated the advent of Open Education Resources (OERs). This has led to a broad OER movement with many universities embarking on similar projects (such as the OU's OpenLearn⁴). While there is debate as to the direction, sustainability and impact of the OER movement (e.g. Siemens, 2009; Wiley, 2009) the OER movement has raised the profile of openness in education, and whether as publicly funded institutions, universities have an obligation to release content freely.

The rest of this report will discuss the results of an audit of scholars drawn from across the OU and assess whether this multidimensional conception of digital scholarship is useful in understanding the use of digital tools. We will also examine evidence of how new technologies are changing the outputs of scholarship, and how the issues that relate to recognising digital scholarship.

Digital Scholar Audit

Method/ Sample

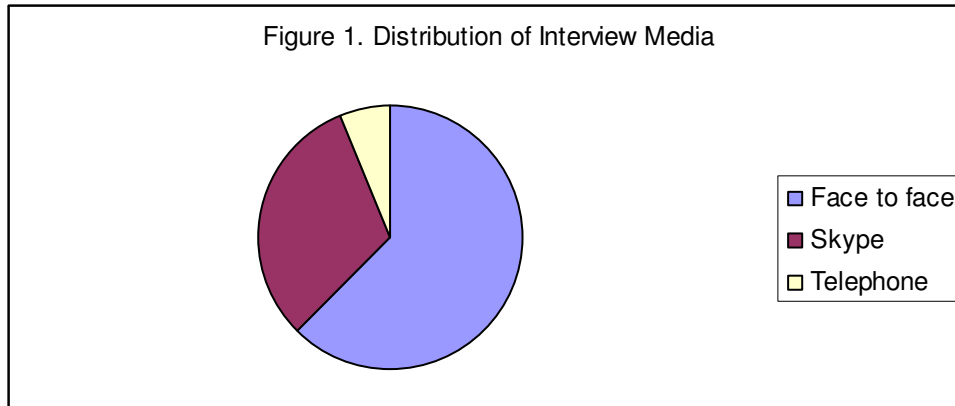
The method chosen for this audit was to interview a wide range of academic staff at the OU about their use of technology in their work. In total sixteen interviews were carried out. These ranged in length from 40 minutes to over an hour and were generally around 50 minutes long. These interviews were semi-structured with a relatively fixed set of questions (Appendix A) which were drawn from an earlier study conducted as part of the project (ref) although this was refined, and during interview new topics were encouraged to emerge and be explored.

Each interview started with a full exploration of the individual's multiple roles within the OU using Boyer's dimensions of scholarship as a starting point in order to disentangle the various elements of each scholar's work, although the extent to which respondents participated in each dimension varied.

These interviews were carried over a range of media. Many were face-to-face and a number were carried out over telephone and Skype (with and without video). These options were used when face-to-face was impractical. The distribution of media is shown in the pie chart below.

3 <http://ocw.mit.edu/OcwWeb/web/home/home/index.htm>

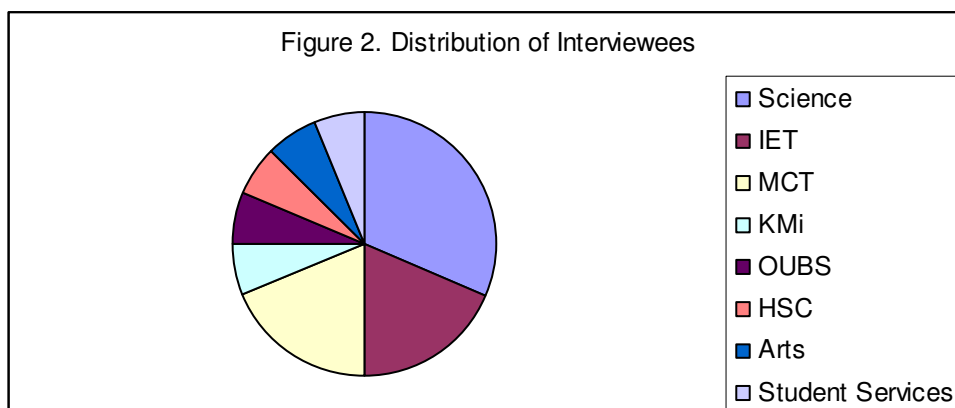
4 <http://openlearn.open.ac.uk/>



The use of this range of technologies is significant given the topic of the study and because the respondents were selected on the basis of their adoption and acceptance of technology. Using these technologies allowed the researcher to draw from a wide range of respondents including a number based in the regions, or whose flexible working patterns (themselves made possible through the adoption of such technologies) made a face-to-face interview difficult or impossible to arrange.

Whilst an audit carried out over such a limited timeframe could not hope to be comprehensive or representative of a very large organization such as the Open University the sample included a diverse range of roles within the OU including: professors, senior lecturers, associate lecturers and research roles.

Other similar studies have suggested that disciplinary differences may be an important factor explaining some difference in the uptake of new technologies amongst academics (Becher, 1994; Fry, 2004; Kemp & Jones, 2007; Kling & McKim, 2000; Pearce, n.d.). Whilst a study of this scale could not investigate this in the context of this study it was important to try to allow for such disciplinary differences in the method, and so participants were drawn from across the various faculties and institutes of the OU, as shown below;



The initial respondents were identified by the project team, which generally meant that they have already engaged with other projects within the digital scholarship theme (e.g. Podstars) or were known innovators and enthusiastic adopters of new technologies. Further respondents were identified through snowballing from this initial group. These two factors explain the uneven distribution of respondents, although given the exploratory nature of this study this is not considered significant.

Analysis/ Results

This section will outline select responses to key questions from the interview schedule (Appendix A). It will start by using the multidimensional Boyer framework to look for evidence of new open scholarship practices amongst this group of early adopters. Following this is an analysis of more general patterns of tool use amongst this group. Due to the limited timescale and difficulty in recruiting and retaining transcribers (5 were used over the course of the project) twelve of the interviews were transcribed and these transcriptions and all of the recordings have been used in the following analysis.

Open Data

Few of the scholars spoken to as part of this study took part in what might be described as discovery and therefore few gathered data as part of their work. Of those that did there was little evidence of a move towards opening up their datasets to the wider scholarly community, let alone general public, although they were keen users of publicly available datasets.

Q: So, you know the details of the, all the insects that I work with, well they're available online,

A; And they're freely available are they?

A: Yes, if you want to, if I want to look up something the guides are online from the Natural History Museum.

Q: Ok, and do you make your data available online?

A: No I don't make raw data available, but I haven't got big datasets that ought to be available online. (DS3)

Amongst the scholars who did produce data there were a variety of data types including the audio recording of insects for DS3 above and 3D visualisations and geospatial data (DS12).

Open Publishing

Scholarly publishing, and reading the scholarly outputs of others, was a significant activity for most of those interviewed. The relationship between traditional paper based journals and online journals was complex, with many traditional journals ceasing to publish hardcopies and only producing online simulacra of a journal, without adapting the format to take advantage of some of the affordances of the new technologies. Similarly online journals were often printed out to be read, and this would negate many of the potential benefits of being digital and multimedia.

A good example of the tensions between modern research and traditional outputs was given by DS12, whose work produced 3D and colour visualisations:

A: Yeah, it's a real problem, because, a few years ago I did some work using a scanning electron microscope, and I needed false colour images, so basically you put green on top of red on top of blue and the combination of those colours give you a reading on an image. So the whole crux of the paper was, look where we've got blue, yeah, and that's really important. Then I had to publish that, but the department said 'but it's going to cost 750 dollars to publish that, because of the journal', they charge 750 dollars, and then 350 dollars after that they are extortionate fees, for colour printing. That's why you rarely get colour printing in science journals.

Q: So these are paper based journals, clearly.

A: Well a lot of people appear to be putting things like that in the supplementary material, which is only available online, but I certainly don't bother going to the supplementary material until after I've read the paper, and established 'well actually I fancy looking at that', which seems to me that you are putting your material in so many different places you are not actually exposing people to all of your work. So it is a real problem, because it is very expensive to publish in colour and a lot of these outputs are in colour and can only be shown in colour.(DS12)

Whilst there would seem to be clear financial incentives to publish such material in online only journals there were barriers to this, with the perception of most respondents that online only journals are not as highly valued.

Open publishing usually focuses on the output of scholarship, but new technologies also lead to new possibilities for more open ways of producing published outputs. An example of this came from DS5 who was writing a book for the traditional academic publisher Springer, but had obtained agreement to blog each chapter in order to get feedback, comments and suggestions from the academic community whilst the book was being written. This scholar discusses the relationship between blogs and more traditional publications:

Certainly the timescale for publishing things is absurd in area where things are moving so quickly, but there is a peer review process, many argue and criticize the bloggers in other spaces for not being, you know, authoritative to the same degree but those bloggers feel that they're part of the vibrant community and that there is peer recognition. I probably sit in the middle, I think probably both are important but they have different purposes, so as I

said, I will put up initial thoughts on my blog but then may work it up into a paper later on.(DS5)

Another respondent discussed some key features of blogs as an output:

Whereas writing you know the blog post type thing that was eight hundred words or so. Five to eight hundred words. It's almost a disposable piece. But its still content full and meaningful. Meaningful enough for someone to give you feedback on and to be able to spot if you're going off on a wrong tangent before too much effort invested. And it might also spark other lines of interest before you've gone too far down a particular path. (DS11)

Similarly there was evidence of scholars looking to non traditional methods for communicating their work to their academic peers and more widely.

So one of the things which I've been toying with, is maybe once I've actually published a paper, would it be possible to kind of present the material in that paper in a different way online. So you know, there would be kind of, maybe you'd press a button and instead of reading the introduction, there would be a bit of me just speaking an introduction. In terms of the experimental, rather than just kind of saying 5 grams of this was added, 3 grams of that, you could actually have a little video of actually how we did it. I don't think I'd want to produce it for peer review. But I think I, I've had it published by the traditional way for the peer review. But what I want to do is, how can I make that paper more accessible, to a group of readers. And I might just you know, put that up on an OU website somewhere, rather than publish it in a journal. But just thinking, you know, and just thinking about how we can, just use that publishing in a different way.(DS8)

A number of respondents mentioned that they thought that publishers were wary about publishing in traditional forms content that was already available online, and this was given as a reason by some not to publish academic content online in blogs.

Producing content in this way and making it openly available brings in the possibility of public engagement, and the next section will look in more detail at this.

Open boundary between academia and public

There were a number of examples of new technologies such as blogs enabling fruitful dialogue with other academics and the public:

[a prominent blogger] he is doing what we would expect an academic to do, he's bringing in new ideas, he's putting them out there, and then he's exchanging views with other academics who are not in the same organisation, and they are developing new learning, and helping other people to see that new learning being constructed. That new understanding is being constructed in front of us (DS7)

And it [DS2's blog] has occasionally made some useful contacts. I mean there's one particular person who has got an interest in information as well. I commented on his blog and he now obviously reads my blog, and occasionally offers comments, which is actually really quite useful.(ds2)

So I think digital tools make it easier to try and keep up, and there's more routes into summaries of research, and presenting research. And I think that's a role that's expanding in, I see that as a key role for academic blogging, is that public engagement, that which is a broader public, but can also be an academic audience outside their speciality, that you know, you can present a sort of easily understandable view of the state of the art in your area, and that, doing that is actually a really important part of scholarship. And I think that's where blogging really adds value.(DS4)

Alongside this were more formal public engagement projects which used new tools, as in below:

I got funding from one of the research councils to have an in school exhibition project, around meteorites, where we take microscopes and things out for people to use, and this was a way of getting that to people that we couldn't visit, because we don't get that much funding for the work. Basically the first year we had 300 online, last year we had 700 online, and they use Moodle, we were using Moodle before the OU adopted Moodle, and elluminte way before the OU used that! And we've run, we have like a course for the students to work through, where they basically explore the solar system, and then at the end of it they have to produce an output and we would like that output to be something that they can put onto the VLE for other schools to see, for us to use the following year. So we've had them produce things like clay animations, they're pretty cool, video and audio podcasts, and these are all primary schools. (DS12)

Similarly a number of the respondents had varying levels of interaction with BBC programming, both for TV and radio. This is clearly public engagement, but using more traditional broadcast technologies, although their production process now incorporates new technologies so that comments on scripts can be made via a wiki and early rushes can be viewed online.

Open Learning

Not many respondents specifically mentioned creating or using OERs as such although there was evidence of a more open way of authoring course content:

So I just started writing the course as a public blog. The idea for the course was that it would be done like an exploration. So it's not necessarily a subject I knew much about so I had a brief, its game design. Its effective media and game design. Yes so I wrote a skeleton and then just starting blogging it. And my intention was it's a ten week course and my intention was to try and write it over twenty weeks in real time ish. Half real time. And the idea of doing it in public was that if anyone did pick up on it they'd be able to contribute back into its development. And it had a few comments. It still gets traffic now.(DS11)

Following on from the section on open publishing there was also gains for students from the opening up of access to academic journals and articles made possible through being put online, albeit still through the OU library's subscriptions:

It's absolutely fantastic we can give our students the research experience of using a library that is actually pretty much the same as campus based students get.(DS4)

There was also an example given of using a wiki in a teaching context, albeit outside of the OU. One respondent who is a very keen re-user of multimedia content for teaching purposes had created a virtual field station for a biology course:

Students have a virtual back pack which contains their cameras, notebooks, field guides. And they have a virtual tutor. Which is me, and so every new place they go to the tutor is there giving them advice. And they travel by day or night, and they get different, they go, when they go into the virtual environment, which obviously is done in pictures, but they, when they come, when they go they get a random selection of animals, in the frame, so its not always the same, so they do the field trip to the same place and see different things.(DS3)

I've been to the Galapagos, I've got a lot of footage, it hasn't all been used. So I cut it to 6 short iTunesU programmes, out of existing footage, telling essentially 6 new stories.

Q: Right, brilliant. And they were available on iTunesU?

A: Yes.(DS3)

Tools used

As you would expect from this group there was high level of use of a wide range of digital tools. As being open to the use of new technology is a feature of the OU charter it was also suggested that this was a particular feature of the OU:

I think probably at the OU we are, there is a tendency to get introduced to a range of tools, but maybe they come in waves. You know the sort of, a slow sort of rolling in wave with a sudden crescendo as the wave hits a lot of people.(ds6)

Alongside the widespread use of e-mail, web browsers, Elluminate and Moodle there were some more recent tools mentioned. One that came up quite a lot was Twitter, with was used in a variety of ways:

I use a range of Social networking tools as standard, so I use Twitter and I use Twitter in a number of ways to keep abreast of what's going on, what others are doing, what research activities are out there, pointers to good blogs or good reports, etc. but also very much as a dissemination vehicle as well, so if I've written a blog post, I'll post it to Twitter as a way of disseminating it, or giving feedback to others about things, or disseminating other people's work as well. (ds5)

I've got some very skewed Twitter percentages, so its sort of, my Twitter grading is very high because important people follow me. I've got no idea why they follow me because I

hardly ever Twitter, but I use it for direct tweets to people like Martin Weller and John Naughton (ds1)

The tool can be rubbish but if the people you want to talk to are in another place, how ever rubbish the tool, that's where you'll go. So its you know, Twitter has more value to it, because Twitters where there's a community of people whose views I value (ds7)

Facebook was mentioned less than Twitter, and respondents reported its use even less. There appears to be key differences in the perceptions between the two system as was summarised by one interviewee:

on Twitter, with yeah, so Twitter we sort of social interaction with people at the OU mainly. Whereas FaceBook tends to be social interactions with people outside the OU. (ds2)

Facebook was used more for communicating with friends and family, as well as informal communications with colleagues and maintaining relationships with professional contacts. Although the boundary between professional and personal was less clear on Facebook than other more professionally oriented social network sites such as LinkedIn or academia.edu, neither of which were used a great deal by the group.

I do communicate with other people in the field via messenger services. Instant messenger, I use yahoo messenger, but I have to say that I talk to a lot of people in the community via Facebook. You often find that we're not talking about work, but you are still talking to your community, you know so you are still sharing stuff. I certainly don't use it, my ex boss, and head of department and things like that are all on Facebook, and I'm friends with them all on Facebook, but we rarely talk about work on Facebook, but it's still that keeping the communications open which I think is quite important.(DS12)

A number of respondents reporting using FirstClass for a range of purposes, despite the ongoing phased changeover to Moodle for teaching purposes at least (should probably discuss this). FirstClass was first adopted by the OU in 1992 and therefore serves as a reminder that older technologies persist and can remain popular:

Well there's FirstClass, the FirstClass conferencing has been very fundamental actually, its been quite significant as to how, it's all breaking down now, because since the [faculty] re-organisation, combined with the move of the university from FirstClass to Moodle. FirstClass is no longer, its sort of you know, being, is fading away. But in the last sort of ten years, all the people that I interact with regularly were FirstClass users. And so that was very much my sort of virtual workplace.(ds2)

Another older technology that is still important is email for many respondents now a core tool in their everyday practice; indeed for some this is the first thing checked each day:

First thing I do in the morning when the alarm goes off, after I've sworn and put my glasses on is I check my emails on my phone. (ds7)

First of all I'm continually checking my emails on my iPhone. : I hate to say this, this is a dreadful, I don't know if I can even say it on, I'm being recorded. But one of the things I do when I get up in the morning, I make myself a cup of tea, and my wife a cup of tea, come back to bed, and I check what's been going on in the world. Even, you know, as I'm drinking my tea. So I'll be checking my emails, I'll be checking my Facebook page.(ds8)

These responses highlight the growing importance of the mobile phone as a portal for accessing some tools and sites such as email and Facebook. Using phones as a portal for accessing professional networks is not without its problems, identity theft and the blurring of the personal and professional being some of them. One respondent had formulated quite a sophisticated response to the danger:

My phone is an android phone so that gives me a browser and Twitter and I use Siesmic on my phone as my client. So even though my phone is an android phone, a Google phone, a Vodafone, which I've got on a contract subscription so got free data unlimited data I wasn't comfortable with registering my main Google account on my phone in case I lost my phone. So what I did I set up a mobile account. So *DS11* is my Gmail identity but *DS11*mobile is the one registered on my phone and that synchs across calendar information and the "to do" list is just being able to put a couple of filters in so that certain mail messages go from my normal account to my phone account. But yes the calendar information synchs across but that is pretty much it. And that is just because I don't want to loose the phone with all its identity bits related to it. So I don't know if that's, I don't know actually, I don't know what would happen. I just don't like thinking all these sort of loose ends everywhere. So I separated my phone identity out.(ds11)

This high level and deeply ingrained use of the mobile phone however was not universal, the extremes of this being demonstrated by one respondent not owning one at all, and another not being a comfortable user of mobile phones in general:

Bearing in mind you are talking to somebody who refuses to have a mobile phone. All this iPhone bollocks, ITS keep coming out with completely passes me by I'm afraid.(ds9)

I'm not a great mobile phone user. I actually had to purchase a mobile phone that had a keyboard recently, because I'm just so rubbish at texting (ds1)

Having focussed on individual tool use the next section will examine tools use across the various communities that the respondents participate in and how they are used to collaborate with colleagues.

Tool use across the community

When asked, most respondents suggested that tool use varied widely across the OU.

It's extremely variable. I mean you've got right the way up to Tony Hirst, have you interviewed him? But he's really up there. My use I would say is you know sort of probably about average, but there will be some who just really just use email and that's it. And don't use email, that much either. (Ds1)

These new tools were also used to create and support communities of scholars:

So there's, there is a sort of, a community of people that I, that are act, that I used to think was a research community, but I'm more thinking as a practice community that I'm connected, I'm only connected to really via Twitter and blogs, and the online world. And that world is just totally online, only exists online really. Sometimes you get together at conferences, but I don't go to many conferences (DS4)

things like Twitter enable you to keep up with a community of practice or scholarship, or whatever you like, in a way that you couldn't. To toss things around blog posts, and bits and pieces, a sharing activity and other sorts of sharing, let you share ideas around in a sort of looser rough form, which is a bit like conferences, but this is, most of those are a level down I think from a conference contribution. It's all you know, its all part of an ecosystem producing good stuff.(DS4)

Multiple technologies can be used to support the same communications and communities as in the example below:

So I can be walking to the cellar bar with X having a conversation and then that conversation will sort of wander through email a bit then it might come up through Twitter. The conversation might then continue with him writing a blog post. Me replying by a tweet. Him coming back with a tweet or an email. Me posting a blog post. Then us walking and having a face to face conversation again. And so our conversations are they continue from where they last were irrespective of the medium. So conversations wander.(DS11)

In addition to the community building and communication aspects of new technologies discussed in the previous section most respondents worked collaboratively as part of the role and there was a wide range of tools used to do this. However there was some frustration with some technologies such as Google docs and wikis, in particular the learning curve required by all participants:

we've switched from using Google Docs to using Word documents posted within the eRoom. I find, to be honest I find using Word and track changes, and comments etc, more user friendly than online at the moment, in terms of the functionality it gives you. (ds6)

you find that you set up a wiki for a group of people and they'll go and look at it and be confused, it doesn't do enough and it doesn't do what it does in a familiar enough way for most people. I think that's something of a theme which keeps coming up in my usage of internet technologies. I'm a bit more up to speed on these things than a lot of my colleagues and you do see this as a pattern, they so 'oh yes this is really good' but when it comes down to it they don't use it.(ds9)

Further to this was evidence of a public tension between early and keen adopters of new technologies and others, even in an unlikely setting:

I was at a talk being given by our previous Vice Chancellor on the future technologies, and future of digital scholarship, and how the 21st century had to be using these technologies. That is wasn't going to be an option, it was just going to be part of the job, and I was tapping away on my laptop and, sort of live blogging it, to post up. And four separate people complained about me being disruptive with by doing that. I do type quite hard and fast, for four people to actually do that independently, they were British people all of them, I thought British people don't complain. You have to have quite seriously have pissed people off to complain, and even if you have only about one in ten people who are seriously pissed off will actually complain. So I must have pissed off about 50 people, out of a room of about 200. And this was a talk about digital scholarship, moving forward with these things, (ds4)

Discussion

There is considerable variety in the evidence of use of new tools across the dimensions. Partly this is due to the relatively small sample which might not have captured the full range of scholarly practices (in particular discovery), and due to the nature of the sample itself. It may also be due to the nature of the OU. However it could also point to a limitation of the scholarly dimensions suggested by Boyer. Further support for this lies with how the use of new technologies led to activities which might themselves break down the dimensions, so that multimedia resources might be used for public engagement and teaching, and a blog might be a method for preparing a book for publication and engaging with the public.

This crossing of boundaries was a feature of new tool use more generally. Specific technologies such as Twitter and blogs were used in a variety of ways. This counters the suggestion that new technologies will change practice in specified ways. It may be a feature of academic practice to experiment with new tools in novel contexts, and there is plenty of evidence from the previous analysis for novel uses of these technologies.

Similarly these technologies are often used together. Each respondent used a wide variety of technologies, and no participant was solely wedded to one; there was evidence of the use of multiple channels to communicate with communities and colleagues. Twitter, e-mail, blog posts and wikis could be used in different ways to produce digital and non-digital outputs.

This mix of technologies includes older technologies such as e-mail and FirstClass. There was clearly some emotional attachment and comfort in using these tools which had built up over a relatively long period of time. These older tools were used alongside new tools, so undermining any distinction between

early adopters and laggards. Examples include the respondent who was maintaining websites on his own server, but refused to use a mobile phone.

There was limited evidence of a 'digital desktop' with some features aggregated into portals such as google and firefox (through add ons). This was not as big a feature as expected and this may be because of the difficulties in integrating multiple heterogeneous technologies into a single portal, or conversely the relative ease in running multiple tools and sites concurrently without the need for a portal.

Conclusions

Obviously given the sample that this study is based on it is not possible to draw strong conclusions about digital scholarship across the OU. However a number of conclusions can be made that apply to this group and are likely to have wider application.

The first of these is that the Boyer framework does not necessarily reflect the practices of the OU scholars spoken to. Whilst it might provide a useful starting point there is some evidence that new tools and technologies are breaking down the traditional barriers that separate the activities of; research, teaching and public engagement. This may be a feature unique to the Open University and may have predated these new technologies, but there is evidence that the open and accessible nature of these web based tools allows for easier public engagement than previously possible, especially if we contrast BBC produced output with iTunes and YouTube.

The second conclusion is that there is evidence of an asymmetrical relationship with the new possibilities brought about through these tools. With datasets there was a willingness to use publicly available datasets, but less willingness to contribute, and with wikis there was initial enthusiasm but less willingness to create the initial content. There are clearly different, overlapping layers of interaction with these tools, and a framework like Social Technographics⁵ might be a useful way to better understand this. This framework separates participants in social media into: creators, critics, collectors, joiners, spectators and inactives. This is a potentially useful model for thinking about how scholars interact with new technologies.

Following on from this it is important to recognise and support heterogeneity of the extent of adoption and range of tools. That is heterogeneity in the tools being used as well as the ways in which they are being used. There is evidence even across this small group of differentiation in the operating systems, browsers

⁵ See http://www.forrester.com/Groundswell/profile_tool.html for more info

and devices used to access tools. There is also strong evidence of a varying range of acceptance and perceptions as to the applications of such tools to support practice. This kind of diversity will require a multilayered and flexible system of support, training and institutional acknowledgement in order to be embedded in the current practice of professionals within the institution.

Lastly there is a danger that through highlighting digital scholarship the interaction between digital and nondigital scholarship will be overlooked, and fetishize the digital. The digital and non-digital are interrelated in complex ways, with one augmenting the other. The digital can lead to increased participation and success in non-digital scholarship outputs (invitations to present/ keynote, publish papers books etc.) which are already recognised within the OU. Similarly non-digital interactions can stimulate the use of new tools and play a part in establishing and strengthening ties that are then continued digitally.

Overall the conclusions that can be drawn from this investigation are that scholarship practices even across this small and relatively homogeneous sample of digital scholars are varied in a myriad of ways. This variety is likely to increase once the whole of the OU is taken into consideration, and this leads to a number of recommendations.

Recommendations

There is a need to support and allow for heterogeneity, across research, teaching and public engagement. Support should be provided for scholars using the tools they elect to use, in the ways they choose to apply them. There should be provision of support to facilitate the discovery of new tools, and the associated integration of these new technologies into their current practice. Support for scholars should include provision for established and importantly still useful technologies in recognition of the emotional attachment placed on older tools.

Whilst there is a growing move to recognise digital scholarship outputs, recognition should also be given to the interplay between digital and traditional scholarly outputs (invitations to keynote etc.). There could be more flexibility in establishing somebody's impact on and participation within a particular community (also see Sam Kinsley's report).

More research is needed into digital scholarship practices across the OU. This could be through targeted action research type projects (perhaps similar to Podstars) or through large scale longitudinal surveys which could track the emergence and uptake of new tools and the support and training requirements of these users and observation of new members of staff joining the scholarly community and the influence they have on the communities use of technology to support practice.

Appendix A: Interview Schedule

1. *What digital tools are used? Why/why not, what are the challenges/advantages/disadvantages if any?*
2. *What is your digital desktop? The websites/ tools that you are always check/ log in to?*
3. *What would you say is the level of use of digital tools in the wider community? What do you regard as the community?*
4. *Do digital tools lead to increased interdisciplinarity?*
5. *How are practices different online vs offline? What is the relationship between digital and physical in relation to communication and publication?*
6. *Who are researchers communicating with? Do digital resources lead to wider collaboration (or is it more like participating in a conference of an existing community, but continuously rather than over 3-4 days)? Is it collaboration or exchange of information? Does it lead to deep engagement in debate?*
7. *Where do researchers 'publish'?*
8. *Evaluation of research output. Should digital scholarship count?*
9. *How do researchers evaluate ideas/sources online? (e.g. the importance of an online presence or off-line familiarity)*

10. *How do individuals evaluate themselves? For example are they concerned about the links, comments, or views they get? Do they rate any metrics, e.g. technorati?*
11. *What is the nature of public engagement? What could it be? In what sense is/can the public participate?*
12. *Are digital resources used in the process of developing an output that is in the same format as before (though perhaps available online) vs. the web leading to a different form of output (e.g. is the wiki that people collaborate on the final – though evolving – output of their research or a step in the process?)*
13. *Is there clear ownership? Are researchers concerned about ownership/plagiarism?*
14. *Lastly, what do you understand by the term "Digital Scholarship", what is a Digital Scholar?*