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Introduction

Digital scholarship is a shorthand for the intersection of three technology related developments: digital content, networked distribution and open practices. It is when digital, networked and open intersect that transformational practice occurs. In this free course, *The digital scholar*, you will explore the impact of digital technologies on scholarly practice.

*The digital scholar* is a free course which lasts about 8 weeks, with approximately 3 hours' study time each week. You can work through the course at your own pace, so if you have more time one week there is no problem with pushing on to complete another week's study. You can also take as long as you want to complete it.
Learning Outcomes

After studying this course, you should be able to:
- understand what is meant by the term ‘digital scholarship’
- recognise Boyer’s scholarship framework
- consider new approaches to research afforded by digital scholarship
- understand how digital, networked technology can influence public engagement
- appreciate the influence of the recent MOOC development.

Introduction and Guidance

How to get a badge

Getting a badge is straightforward! Here’s what you have to do:
- read each week of the course
- score 50% or more in the two badge quizzes in Week 4 and Week 8.

For all the quizzes, you can have three attempts at most of the questions (for true or false type questions you usually only get one attempt). If you get the answer right first time you will get more marks than for a correct answer the second or third time. If one of your answers is incorrect you will often receive helpful feedback and suggestions about how to work out the correct answer.

For the badge quizzes, if you’re not successful in getting 50% the first time, after 24 hours you can attempt the whole quiz, and come back as many times as you like.

We hope that as many people as possible will gain an Open University badge – so you should see getting a badge as an opportunity to reflect on what you have learned rather than as a test.

If you need more guidance on getting a badge and what you can do with it, take a look at the OpenLearn FAQs. When you gain your badge you will receive an email to notify you and you will be able to view and manage all your badges in My OpenLearn within 24 hours of completing the criteria to gain a badge.

Get started with Week 1.

What is a badged course?

While studying The digital scholar you have the option to work towards gaining a digital badge.

Badged courses are a key part of The Open University’s mission to promote the educational well-being of the community. The courses also provide another way of helping you to progress from informal to formal learning.

To complete a course you need to be able to find about 24 hours of study time, over a period of about 8 weeks. However, it is possible to study them at any time, and at a pace to suit you.

Badged courses are all available on The Open University’s OpenLearn website and do not cost anything to study. They differ from Open University courses because you do not receive support from a tutor. But you do get useful feedback from the interactive quizzes.
What is a badge?
Digital badges are a new way of demonstrating online that you have gained a skill. Schools, colleges and universities are working with employers and other organisations to develop open badges that help learners gain recognition for their skills, and support employers to identify the right candidate for a job.
Badges demonstrate your work and achievement on the course. You can share your achievement with friends, family and employers, and on social media. Badges are a great motivation, helping you to reach the end of the course. Gaining a badge often boosts confidence in the skills and abilities that underpin successful study. So, completing this course should encourage you to think about taking other courses.

Moving around the course
The easiest way to navigate around the course is through the ‘My course progress’ page. You can get back there at any time by clicking on ‘Back to course’ in the menu bar.
It’s also good practice, if you access a link from within a course page (including links to the quizzes), to open it in a new window or tab. That way you can easily return to where you’ve come from without having to use the back button on your browser.

Making the most of this course
As this course is about digital scholarship, we would encourage you to engage in it as a process as well as studying it as a topic. Most of the activities in this course will ask you to make some notes, or reflect on the content. You are encouraged to do this on your own blog.
This can be one you have already, or one you set up yourself. You can easily set up a free blog via Wordpress.com or Blogger.com. We won’t give any practical advice on blogging in this course, but there is plenty available online. If you are unfamiliar with blogging use this course as an opportunity to experiment with it and then reflect on whether it can be used as part of your digital scholarship identity. When you wish to share a post with others taking this course, please use the hashtag #dscholar; this can also be used on other social media such as Twitter. Search for this hashtag to see other contributions.
This is not a course about blogging, however, so we will not provide detailed instructions on setting one up. The sites mentioned above do a good job of this, plus there is a lot of advice online. Keeping a blog is a good way to experience for yourself many of the aspects you will study during the course. However, if you feel that setting up and maintaining a blog will be a distraction, it is not a requirement to study the course. If you decide not to keep a blog we suggest that you keep a learning journal as a way of noting and structuring your thoughts through the course.
• understand what is meant by the term ‘digital scholarship’
• recognise Boyer’s scholarship framework
• consider new approaches to research afforded by digital scholarship
• understand how digital, networked technology can influence public engagement
• appreciate the influence of the recent MOOC development.

After completing this course you will be able to:
If you wish you can also purchase a hard copy of the book from the publisher or other retailers such as Amazon, but this is not required for the course.
Or you can download a PDF of the book here: The Digital Scholar. Page numbers within the course refer to the online version.
Although full extracts from the book are provided within this course, we recommend that you obtain a copy of the book to use alongside the course. It is available under an open licence, which means it can be freely accessed and reused, as long as the author is acknowledged. You can read it online for free at the publisher’s website: Bloomsbury Academic.
This course is based on the book The Digital Scholar by Martin Weller. Most weeks of the course will take one chapter of the book and examine it in more detail. There are extracts from the book embedded in the course and you will be told where they start and stop. The book is concerned with how digital, networked technology is changing academic practice. The intention is not to frame this as a ‘good’ or ‘bad’ development, but rather to consider what are the changes occurring and how might these influence practice.
You’ll get plenty of opportunities to practise your new understanding and skills. Part of this practice will be the weekly interactive quizzes, of which Weeks 4 and 8 will provide you with an opportunity to earn a badge to demonstrate your new skills. You can read more on how to study the course and about badges in the next sections.
Digital scholarship is a shorthand for the intersection of three technology related developments: digital content, networked distribution and open practices. It is when digital, networked and open intersect that transformational practice occurs. In this free course, The digital scholar, you will explore the impact of digital technologies on scholarly practice.
The digital scholar is a free badged course which lasts 8 weeks, with approximately 3 hours’ study time each week. You can work through the course at your own pace, so if you have more time one week there is no problem with pushing on to complete another week’s study.

Week 1: Introduction

What is meant by the term ‘digital scholarship’? In the first week of the course you will develop some initial thoughts on how technology is affecting practice. You will also look at a framework for considering scholarship.
Watch Martin Weller as he introduces Week 1:

Video content is not available in this format.
Week 1 introduction
Unlike other weeks in the course, Week 1 is not based around a chapter of the book *The Digital Scholar*, but instead covers the themes addressed in the first four chapters. In this week you will consider what is meant by the term ‘digital scholarship’, look at some initial thoughts on how technology is affecting practice, and finish by looking at the framework the book adopts for considering scholarship.

You should use this week to consider your own practice. You might find that not all aspects of scholarship discussed apply to your work; that is to be expected. You might also find that you are already active in some areas without realising it.

There is less reading, and more reflecting, this week than in others and this is deliberate; considering your current activities will help you to determine how your practice might change as you pursue further digital scholarship.

By the end of this week you will have:

- gained an understanding of what is meant by the term ‘digital scholarship’
- gained knowledge of Boyer’s scholarship framework
- reflected on your own experience and practice
- set up a blog for use in the course, if required.

Before you start, The Open University would really appreciate a few minutes of your time to us about yourself and your expectations of the course. Your input will help to further improve the online learning experience. If you'd like to help, and if you haven't already done so, please fill in this [optional survey](https://example.com/survey).
1: Into the digital

Figure 1 Some digital services

In later weeks you will be introduced to some of the ideas surrounding scholarship in the digital world but let’s begin by considering what is meant by ‘digital’. In the Introduction and guidance we suggested that you might use a blog during this course to share your thoughts and to develop your practice but let’s take a look at other online services and tools first.

A characteristic of the digital tools that you will look at here is that they have been developed for sharing or filtering resources. A quick list of services we might use should include:

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delicious</td>
<td>Bookmarking site</td>
</tr>
<tr>
<td>Twitter</td>
<td>Social network site</td>
</tr>
<tr>
<td>SlideShare</td>
<td>Share and find presentations</td>
</tr>
<tr>
<td>YouTube</td>
<td>Video sharing site</td>
</tr>
<tr>
<td>Scribd</td>
<td>Open publishing service – useful for finding and sharing documents</td>
</tr>
<tr>
<td>Flickr</td>
<td>Photo sharing – users can allow others to download and reuse images</td>
</tr>
<tr>
<td>Tumblr</td>
<td>Micro-blogging site</td>
</tr>
<tr>
<td>Blog</td>
<td>Web log – can be used for sharing, filtering and aggregating resources and ideas.</td>
</tr>
<tr>
<td>Wikipedia</td>
<td>An online encyclopedia created and maintained by users</td>
</tr>
</tbody>
</table>

These tools are often described as being part of Web 2.0; a term used by Tim O'Reilly in 2004 to describe changes in the way in which the web was being used. Web 2.0 refers to a growth of collaborative tools and a growth in user-generated web content; the shift from the web as something we consume into a web to which we can all contribute. This does not mean that contribution is mandatory but that online sharing and social networking services can be valuable sources of information, artefacts and ideas.
The tools listed here are free to use, though some offer a fee-paying premium service, and have few skill requirements. You may have created a blog before, or one to use alongside this course, so you may have experienced how simple it can be to contribute content to the web. Most blog services allow users to add widgets that draw in feeds from other services; for example, you might choose to display your Twitter feed on your blog.

Activity 1 Contributing to the digital world
Allow about 30 minutes

You may be familiar with some or all of the tools listed above. Think about how you use them currently. Explore any that you are not familiar with and consider how they might support your work. Use the box below to make some notes.

Remember to bookmark any tools that may be of value. If you find any tools that seem particularly useful, or if you use other tools not listed here, blog them using the #dscholar hashtag. (If you are unfamiliar with the use of hashtags, they are explained in this guide to hashtags in social media.)

Provide your answer...

As you move through the course, think about how digital services can support your scholarship and how you can use them to share your work.

2: What is digital scholarship?

In the book *The Digital Scholar*, Martin Weller suggests that ‘digital scholarship’ is really shorthand for the intersection of three technology related developments, namely:

- digital content
- networked distribution
- open practices.
Figure 2  What is ‘digital scholarship’?

It is when digital, networked and open intersect that transformational practice occurs. The Wikipedia definition of digital scholarship is ‘the use of digital evidence, methods of inquiry, research, publication and preservation to achieve scholarly and research goals’ (Wikipedia, 2016).

Other authors list the types of behaviours that represent digital scholarship; Pearce et al (2010), for example, state that digital scholarship is ‘more than just using information and communication technologies to research, teach and collaborate, but it is 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’.

This indicates that digital scholarship is not easily defined. As with the term elearning, there is a temptation to consider that this is just a slight addition to normal practice. Weller would, however, argue that to dismiss digital scholarship as a ‘slight addition’ is to miss some of the significant changes that are currently underway, and also the possibilities the application of digital technology affords scholarly practice. You will consider these in subsequent weeks of the course.

The concerns of digital scholarship also vary according to disciplines and a person’s role within them. For example, a related term is that of ‘digital humanities’. This might be focused in large scale digitisation projects such as the Old Bailey Online archive, or use of geographical data, for example Pelagios.

Another related term is ‘open science’, which is concerned with both the communication of science in an open manner, and the opening up of large data sets for others to use, for example, the Climate Change Knowledge Portal.
3: How might digital scholarship look?

Bryan Alexander is an educator with a particular interest in how education and technology intersect.

Watch the following video of Bryan talking about a digital scholarship scenario.

Video content is not available in this format.
Bryan Alexander: a digital scholarship scenario

Some of the points Bryan makes might be described as amplification: the way in which digital technologies enable scholars to 'do more scholarship'. One aspect of this could be the way in which digital methods of working allow the construction of richer, more detailed models of an area of study. This would be made available to a wider audience and might also attract contributions that help to develop the work further.

Activity 2 Consider your own practice
Allow about 20 minutes

Think about how digital, networked and open technology has influenced one area of your own practice. It could be a small change, or a large one. How do you see it developing in the near future? How significant is this change for how you operate? (If you do not have an example from your own practice, then consider how writing and disseminating research findings has changed.) Make some notes. You could share this reflection on your blog using the hashtag #dscholar.

Provide your answer...
4: The nature of digital scholarship

One way to consider the nature of change that digital scholarship represents is to take an existing framework for categorising scholarly activity and examine how these practices are impacted. Weller takes this approach in the book *The Digital Scholar*, using Ernest Boyer’s 1990 classification. Using data gathered from more than 5,000 faculty members, Boyer (1990) classified the types of activities in which scholars regularly engage. His report sought to place all scholarly activity on an equal footing, stating: ‘What we urgently need today is 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’ (Boyer, 1990, p. 24).

In Boyer’s definition of scholarship, there are four components, each of which, he suggests, should be considered as of equal value by universities and government policy. These are:

- **Discovery** – This is the creation of new knowledge in a specific area or discipline. This is often taken to be synonymous with research. This is probably closest to the public conception of scholarship, as universities are often the site of significant breakthroughs.

- **Integration** – This is focused on interpretation and interdisciplinary work. It is moving away from the pure, ‘genesis’ research of discovery. Boyer states that it is ‘making connections across the disciplines, placing the specialties in larger context, illuminating data in a revealing way, often educating non-specialists’.

- **Application** – This is related to the concept of service, and can be seen as engagement with the wider world outside academia, which might include public engagement activities as well as input into policy and general media discussions. This can also include the time spent peer-reviewing journal articles and grant applications and sitting on various committees.

- **Teaching** – Much of the interpretation of Boyer can be seen as an attempt to raise the profile of teaching. He argues that ‘the work of the professor becomes consequential only as it is understood by others. Yet, today, teaching is often viewed as a routine function, tacked on’.

In the next four weeks we will take each of these components in turn and consider the digital scholarship perspective on them. As an overview, watch this short video with Micah Altman, the director of research for MIT Libraries.

Video content is not available in this format.

**Micah Altman on digital scholarship**
Activity 3  Four aspects of digital scholarship
Allow about 20 minutes

Before you consider each of these aspects of scholarship and how they can be influenced by digital technologies, take some time to consider what will be the biggest change for each component. Make notes or use your blog to jot down your thoughts and add the hashtag #dscholar if you wish to make them available to others.

Provide your answer...

5: This week’s quiz.

Check what you’ve learned this week by taking the end-of-week quiz.
Week 1 quiz. To view this content please access the complete course on OpenLearn
Open the quiz in a new window or tab then return here once you’ve finished it.

6: Summary

During this week you have started to consider what we mean by the term ‘digital scholarship’ and looked at some of the tools that may be of value to us as digital scholars. You have looked at a range of definitions and characteristic behaviours of digital scholarship and set out Boyer’s classification of the activities in which scholars might regularly engage. You will be using each component of Boyer’s definition to consider how they relate to the digital world and we will continue to encourage you to explore this world.
Next week you will look at some of the impacts of digital technologies on research activity.

**Week 2: Introduction**

Discovery is the first of Boyer’s scholarly functions. As you saw in Week 1, this is the creation of new knowledge in a specific area or discipline. In Chapter 5 of *The Digital Scholar* Martin Weller has broadened this out to mean research and this week you will look at some of the impacts of digital technologies on research activity.

Watch the video now to find out more about this:

**Video content is not available in this format.**

**Week 2 introduction**

By the end of this week you will have:

- developed an understanding of how researchers approach new technology
- considered new approaches to research afforded by digital scholarship
- reflected on your own practice and research possibility.

**1: Researchers and new technology**

This week of the course is drawn from Chapter 5 of *The Digital Scholar* and starts at page 38 of the PDF version. In this first section Weller looks at how researchers are adopting digital practices and also how research findings that are published might change. The extract starts on the next page.
Figure 1 Research

1.1 The current state

There have been a number of recent studies examining researchers’ use of new technologies, and the conclusion one can draw from these is of cautious experimentation. Perhaps, more than any other of the scholarly functions, the use of new technology in research is the most conservative, maybe because research is the practice still most highly valued. This chapter will look at some of the current evaluation research and then look at some of the potential uses.

If technology uptake is examined first of all, most studies indicate that researchers tend to use a variety of tools, some of which are provided by their institution and others they have selected themselves (Kroll and Forsman, 2010). In terms of Web 2.0 technologies, there is tentative take-up; for example, Procter, Williams and Stewart (2010) in the United Kingdom found that a majority of researchers are making at least occasional use of one or more Web 2.0 tools or services for purposes related to their research: for communicating their work; for developing and sustaining networks and collaborations; or for finding out about what others are doing. But frequent or intensive use is rare, and some researchers regard blogs, wikis and other novel forms of communication as a waste of time or even dangerous.

There is little evidence to suggest that age is a factor in the use of new technologies, as Carpenter, Wetheridge and Smith (2010) claim:

There are no marked differences between Generation Y doctoral students and those in older age groups. Nor are there marked differences in these behaviours between doctoral students of any age in different years of their
study. The most significant differences revealed in the data are between subject disciplines of study irrespective of age or year of study.

There is a general suspicion around using social networks to share findings, although many researchers use them for personal and professional networking (James 2009, Carpenter et al. 2010). Carpenter et al. describe researchers as ‘risk averse’ and ‘behind the curve in using digital technology’. Similarly Harley et al. (2010) state that ‘we found no evidence to suggest that “tech-savvy” young graduate students, postdoctoral scholars, or assistant professors are bucking traditional publishing practices’.

1.2 Publishing research

Figure 2 Publishing

The relationship with publishing is a tense one. While many researchers effused support for open access, for instance, with James et al. (2009) reporting 77 per cent agreement with the principle of open access publishing, there were also reservations about quality or, more significantly, perceptions by others of quality. Similarly Proctor et al. (2010) found that print journals were rated as more important than online ones.

What this indicates is the strong relationship between academic journals and recognition. It is through publishing in well-renowned journals that researchers are likely to gain tenure or promotion and also to be recognised in their own institution. There is thus a disincentive inherent in scholarly practice to explore new forms of publication, even when the majority of researchers themselves may support them. This is also related to reputation and identity. If other forms of output are perceived as frivolous then early stage researchers in particular will be discouraged from engaging with them. The academic with tenure, however, is often more willing to experiment with new technologies and forms of dissemination, as their reputation is already established. For instance, in the US context at least, Kroll and Forsman (2010) claim that ‘the issue of open access publishing elicited strong support with faculty who want to share their publications freely. However, faculty express a strong preference for their graduate students to publish in traditional high-impact journal’.

Harley et al. (2010) put it even more bluntly:
Established scholars seem to exercise significantly more freedom in the choice of publication outlet than their untenured colleagues …

The advice given to pre-tenure scholars was consistent across all fields: focus on publishing in the right venues and avoid spending too much time on public engagement, committee work, writing op-ed pieces, developing websites, blogging, and other non-traditional forms of electronic dissemination.

Academic research is then in a strange position where new entrants are encouraged to be conservative while the reinterpretation of practice and exploration is left to established practitioners. This seems to be the inverse of most other industries, where ‘new blood’ is seen as a means of re-energising an organisation and introducing challenging ideas. This should be an area of concern for academia if its established practice is reducing the effectiveness of one of its most valuable inputs, namely the new researcher.

One area that is seeing significant change is the open access approach to data. There is a driver in this area from research funders, who are implementing policies which place data sets as a public good, with frameworks and services for discovery, access and reuse. In the United Kingdom, five of the seven research councils now have such policies (Swan and Brown, 2008). There is variation across the disciplines, where many have an already established practice of sharing data and others where this is not the norm.
1.3 Social networks

Figure 3 Social networks

The use of social networks to form research teams is still rather tentative, with well-established practices still prevalent. Kroll and Forsman (2010) stress the importance researchers place in personal contacts:

Almost all researchers have created a strong network of friends and colleagues and they draw together the same team repeatedly for new projects …

Everyone emphasizes the paramount importance of interpersonal contact as the vital basis for agreeing to enter into joint work. Personal introductions, conversations at meetings or hearing someone present a paper were cited as key in choosing collaborators.

This perhaps indicates something of a closed shop – successful researchers have established personal networks which have been built up from years of attending conferences and previous collaboration. As financial pressures begin to bite in research funding, competition for grants becomes more intense, with success rate decreasing from 31 per cent in 2000 to 20 per cent in 2009. The average age of first-time principal investigators has increased over the same period (Kroll and Forsman, 2010). Both of these factors may suggest that having previously successful teams will become more
significant, thus creating a research funding spiral, where a greater percentage of the smaller funds goes to a decreasing set of researchers.

The picture we have then of research is one where scholars are exploring the use of a number of different technologies to perform certain functions individually, but the overall uptake and attitudes vary enormously. This is partly because ‘research’ is such a catch-all term which encompasses differences in disciplines, widely varying research methodologies and, of course, many different personalities and attitudes. The engagement or uptake with new technologies is less than might be expected or found in other communities. As Wu and Neylon (2008) put it:

   The potential of online tools to revolutionize scientific communication and their ability to open up the details of the scientific enterprise so that a wider range of people can participate is clear. In practice, however, the reality has fallen far behind the potential.

1.4 Use of new technologies

Figure 4   Research

Given the potential benefits of new technologies, why might this be so? The environment within which research operates can be seen as contributing to a lack of engagement. For example, in the United Kingdom, there was a Research Assessment Exercise, now superseded by the Research Excellence Framework (REF), which assesses the quality of research in UK universities and then allocates funds on this basis. Similar schemes have been implemented in Australia, the Netherlands and New Zealand. The current proposals for the REF have an aim to ‘support and encourage innovative and curiosity-driven
research, including new approaches, new fields and interdisciplinary work’. However, the
types of outputs mentioned focus on journal articles, and the exploration of metrics is
restricted to a few commercial publishers’ databases. There is no explicit encouragement
to engage with new forms of outputs or to forefront an open access approach. As with all
such exercises they significantly shape behaviour, and do not simply measure it, so the
message researchers may have gained from their institution that the exploration of new
approaches is discouraged becomes reinforced at a national level.

Where researchers are using new tools they are doing so in conjunction with existing
ones, finding appropriate uses for the tools to make their work more effective. Proctor
et al. (2010) summarise it thus:

There is little evidence at present to suggest that web 2.0 will prompt in the
short or medium term the kinds of radical changes in scholarly communications
advocated by the open research community. Web 2.0 services are currently
being used as supplements to established channels, rather than a replacement
for them.

This may be an entirely reasonable approach, since research is at the core of what it
means to be a scholar, and issues around quality and reliability are essential in
maintaining the status and reputation of universities. A cautious approach is therefore not
surprising as researchers seek to understand where the potential of these new tools can
enhance their practice, while simultaneously maintaining the key characteristics of quality
research. I would argue that it is this integrity of research which should frame discussions
and experimentation with new technologies, and not the negative influence of promotion
criteria and funding frameworks, since a concern about the nature of research is just as
likely to accept new methods if they improve its efficacy as reject them if they threaten its
reputation.

The research context, in particular funding and publication models, may work against the
adoption of new approaches, but that may not be the only reason. There may be intrinsic
conflicts with the ingrained practices of the discipline itself. For example, examining
‘Science 2.0’ in Nature, Waldrop (2008) found that while wikis were being used regularly
as collaborative research tools, blogging was less popular. The reasons for this may not
be simply a reluctance to embrace new technology but rather that the form of
communication runs against the training and values scientists have developed over many
years:

‘It's so antithetical to the way scientists are trained,’ Duke University geneticist
Huntington F. Willard said at the April 2007 North Carolina Science Blogging
Conference, one of the first national gatherings devoted to this topic. The whole
point of blogging is spontaneity – getting your ideas out there quickly, even at
the risk of being wrong or incomplete. ‘But to a scientist, that's a tough jump to
make,’ says Willard, head of Duke's Institute for Genome Sciences & Policy.
‘When we publish things, by and large, we've gone through a very long process
drafting a paper and getting it peer reviewed’.

There may be a dilemma with science in particular and the informal lightweight
technologies: scientists are engaged in the business of predicting the future. Given certain
variables then these outcomes will ensue with a certain probability (or these outcomes are
a result of these input variables). But as we have seen already, the benefits of many ‘Web
2.0’ ways of working are wrapped up in unpredictability. Authors won't know which blog
posts will be popular; they can share ideas on Twitter but can't predict who will take them
up; they can release research data but won't know what the uses for it will be. It might be
the case then that scientists in particular want predictable benefits and outcomes from
engaging in this type of activity, and at least at this stage these benefits are less than
predictable.

This is the end of the extract from *The Digital Scholar*.

2: Changing research approaches

The way research is conducted is changing and in the next section you will look at one
such change. You might be interested in watching this
slidecast introducing guerilla research. Please note that there is no commentary.

Although much research will remain unchanged or be only slightly affected by digital
scholarship, other aspects may change quite radically. The concept of research has been
shaped in many ways by the constraints of what is possible prior to a networked world.

Weller expanded on this idea in a later book, *The Battle for Open* (Weller, 2014),
proposing the idea of ‘Guerrilla research’. The following is an excerpt from that book.

2.1 The art of guerilla research

![Guerilla](image)

**Figure 5  Guerilla**

We are accustomed in academia to conceptualising research as having certain
components: it is often externally funded research and it produces a traditional output
such as a journal article or book. We think of research as having a certain ‘size’ for
something to count. One of the implications of open scholarship, though, is that it creates
different ways of approaching research. The dominant attitude towards how research is
conducted was shaped prior to the arrival of digital, networked and open technologies. Some of that attitude is undoubtedly still valid, but there are also a host of possibilities that are prohibited by remaining wedded solely to that view.

One such aspect is what might be termed a Do It Yourself and Do It Now approach. For instance, establishing a journal was an arduous task that needed negotiations with publishers and a sufficient business model to be workable. For some areas, such as interdisciplinary journals, the projected market might be too small to be economically worthwhile. However, the development of open online journal software such as OJS and Google's Annotum removes many of these considerations. An individual could start a journal in an afternoon. I experimented with creating a Meta EdTech journal (Weller, 2011), which republished open access journal articles I selected from other journals (as an experiment into the possibilities rather than as a serious journal). Such a journal could feature original contributions, be experimental in format or create an interdisciplinary journal by republishing existing articles with a commentary. No permission is required to create it, and it can operate at low cost. Of course, one might argue that the presence of a publisher provides legitimacy, but if the individual (or team) have sufficient networked identities, then that creates its own form of legitimacy.

Another form of research might be to create an app; for instance, when a team at the OU created Facebook apps for students (Weller, 2007), their working assumption was that they would act as if they were external parties and not have access to any privileged information. Although it required specialist software development in the spare time of one of the team, the apps were developed for no cost and with no permission required. Building apps might be a legitimate means to gather research data.

A third example is the interrogation of open data. Tony Hirst's blog gives many examples of mining data from government sites or social media tools such as Twitter to investigate hypotheses. He investigated how influential spending data was on local council decisions (Hirst, 2013), or who was tweeting links relating to a BBC television programme and how they were connected (Hirst, 2012). Another approach is to use public writing as a textual source; for instance, travel blogs have proved to be a rich seam of research data, producing articles on identity (Kane, 2012), marketing (Schmallegger and Carson, 2008) and methodology (Banyai and Glover, 2012).

I should stress that none of these examples are meant to supplant traditional approaches to research. They are not superior to them, but in addition to them. They are often complementary also. An initial piece of individual low-cost research may form the basis for bidding for funding for more substantial work.

What is common to all of these, and indeed to many of the open education approaches such as the original MOOCs, is that they do not require permission, except maybe some relating to time allocation. In his review of the film The Social Network, Creative Commons founder Larry Lessig (2010) pointed out that it was this removal of permission barriers that was the really significant part of the Facebook story: 'What's important here is that Zuckerberg's genius could be embraced by half a billion people within six years of its first being launched, without (and here is the critical bit) asking permission of anyone. The real story is not the invention. It is the platform that makes the invention sing.'

This same freedom applies to scholarly practice also, including how we conduct research, disseminate results, and teach. This 'just do it' approach can adopt a term from software development: 'guerrilla research'. Unger and Warfel (2011) argue persuasively for it, claiming that 'Guerrilla research methods are faster, lower-cost methods that provide sufficient enough insights to make informed strategic decisions.'

Guerrilla research has the following characteristics:
It can be done by one or two researchers and does not require a team.
It relies on existing open data, information and tools.
It is fairly quick to realise.
It is often disseminated via blogs and social media.
It doesn't require permission.

The extract from *The Battle for Open* ends here.

### 2.2 Different approaches

Of course this is not the only way in which approaches to research are changing but now you will think about how a ‘guerilla research’ approach might work in your setting.

---

**Activity 1 Going guerilla**

*Allow about 30 minutes*

Consider an area that you are interested in, either relating to your professional practice, or personal interest. Think about how you could adopt a ‘guerrilla research’ approach to investigating one aspect of it. Make sure it accords to the characteristics set out in the previous extract. It can use open data, invite contributions from others, or perform analysis of other content, but it should not require permission or funding to realise, and should be something you can do largely on your own.

Share your ideas on your blog and look at those of others.

Does being able to conduct this type of research change the nature of what it means to do research? How does it relate to more traditional research approaches? Was it easy to think of such an example?

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### 3: This week’s quiz

Check what you’ve learned this week by taking the end-of-week quiz.

Week 2 quiz. To view this content please access the complete course on [OpenLearn](https://openlearn.org).

Open the quiz in a new window or tab then come back here when you’ve finished.

### 4: Summary

This week you have looked at what might be considered the core scholastic activity: research. You have been introduced to the research landscape and some of the research activities where the use of digital technologies is starting to have an impact. You have also been introduced to the idea of ‘guerrilla research’ and, hopefully, given some thought as to how you might use this approach in your own practice. Finally, you have considered some of the key characteristics of digital scholarship: openness, collaboration and speed. Watch out for these strands reappearing in later weeks.

Next week you will consider the potential of networked technologies.
1: Interdisciplinarity and permeable boundaries

In this video Aaron Shapiro, Director of Public History at the University of North Carolina at Charlotte, talks about being a public historian. He discusses two projects where he used a variety of digital scholarship techniques to gain inputs and exposure. As you watch, try to consider how such projects would have been implemented before digital scholarship.

If you are reading this course as an ebook, you can access this video here
https://www.youtube.com/watch?v=LM0SBnUB3LU

Watch the Video at YouTube.com
Aaron Shapiro: digital scholarship at UNC Charlotte

This week’s extract from The Digital Scholar is based on Chapter 6 (from page 46 onwards of the PDF). It starts on the next page.

1.1 The potential of technology

Figure 1 New technologies
The potential of new technologies to encourage interdisciplinarity may be greater than their use in research. Because interdisciplinary work is often not well represented by the existing funding and publishing environment, it is also not subject to the restrictions this places on practice and innovation. The lightweight and unrestricted forms of communication found in many Web 2.0 tools may serve the needs of interdisciplinarity to overcome existing disciplinary and geographical boundaries (Anderson, 2007).

1.2 Blogs

Taking blogs as an example Aemeur, Brassard and Paquet (2005) suggest they act as a form of personal knowledge publishing which fosters interdisciplinary knowledge sharing. An interesting, but as yet probably unanswerable, question is, to what extent do the new technologies and associated practices create a common set of values, epistemological approaches and communication methods? That is, do the cultural norms associated with the use of the new technologies override those of the separate disciplines? Obviously there is nothing inherent in the technologies themselves that force users to behave in a specific manner; for example, one could use Twitter to simply repeat the same sentence every day. But successful use of the technologies often requires the adoption of certain approaches or cultural norms, whether it is deliberate or not.

Continuing with the example of blogging, regardless of the subject matter of a particular blog or the informal community to which that blog may belong to, there are some persistent cultural norms. Shaohui and Lihua (2008) suggest the following three characteristics of blog culture:

- Thought share – if the first generation of websites were characterised by information sharing, then blogs mark a move to sharing thoughts.
• Nonlinearity and concentricity – through linking, embedding, within blogs and then aggregation of blogs, there is a nonlinear construction of knowledge.
• Criticalness and multivariate collision – specifically this arises from a personal, subjective standpoint that attracts varied comments and views.

The blogger and entrepreneur Loic Le Meur (2005) suggested a number of aspects of a blog community, including:

• A willingness to share thoughts and experiences with others at an early stage;
• The importance of getting input from others on an idea or opinion;
• Launching collaborative projects that would be very difficult or impossible to achieve alone;
• Gathering information from a high number of sources every day;
• Control over the sources and aggregation of their news;
• The existence of a ‘common code’: a vocabulary, a way to write posts and behaviour codes such as quoting other sources when you use them, linking into them, commenting on other posts and so on;
• A culture of speed and currency, with a preference to post or react instantaneously; and
• A need for recognition – bloggers want to express themselves and get credit for it.

By becoming a blogger then, one begins to adopt these practices, because they make for a successful blog, and they are represented in the blogs that constitute the cultural norms.

Ehrlich and Levin (2005) state that ‘norms and metanorms provide a cultural stickiness or viscosity that can help sustain adaptive behaviour and retard detrimental changes, but that equally can inhibit the introduction and spread of beneficial ones’. The cultural stickiness of the blogging community then is to share ideas, link and acknowledge others, gather and share information quickly, and operate in a timely manner. These could also be presented as attributes which can be seen to serve the needs of interdisciplinarity.
1.3 Interdisciplinarity

Precisely because it is relatively new, there has been a good deal of interdisciplinarity in the blogosphere. Although many bloggers will tend to read the blogs within their subject area, they will also come across those of overlapping or even distinct disciplines. But also within any given blog there is an element of interdisciplinarity or at least variety. Because blogs operate at the intersection of personal and professional life, unlike a journal, their content is not bounded by discipline. While a blogger may post predominantly on a particular subject (say ‘Open Science’) they may also have an interest in other areas, for example, Haikus and Japanese poetry, which they will bring into their posts, precisely because this personal mix is what renders blogs interesting. Open Science and Haikus would not be a combination one is likely to find in a conventional journal, but when the publishing filter is removed, and the community norms promote an element of personal interest, then this kind of mix arises. For example, one of my favourite blogs is Jim Groom’s Bavatuesdays, which mixes thoughts on educational technology and advice on the blogging platform WordPress with meditations on B-horror films. The mix seems perfectly logical and acceptable within the norms of the blogging community.

This may not constitute interdisciplinarity in an academic sense, but we can see interdisciplinary knowledge arising in at least four ways in blogs:

1. as the formal communication platform of a department, project or individual with a specific interdisciplinary remit;
2. through the historical context of the individual, who may have specialised in a different domain previously and can reference this in a personal blog;
3. informal interests which overlap with the more substantive content of the blog, such as the examples above; and
4 through comments and links from the blogs’ wider readership.

Each of these routes for interdisciplinarity would be difficult to realise through the more formal mechanisms of journals or conferences.

What is potentially significant for interdisciplinarity then is not so much the technology itself but the practices that are associated with it. This is particularly relevant with regard to openness.

1.4 Twitter as a social network

Figure 4 Twitter

Blogs provide a good example of how interdisciplinary knowledge can be disseminated. Another example is the social network, which potentially allows for connections between people and content across disciplines. I will take Twitter as the example for a social network here to explore this, although it could be applied to other tools equally well.

It was launched into the mainstream in 2007 and was a big success at the influential SXSW conference that year. One of the key elements in its success has been its open
API, which allowed other developers to build applications using the Twitter data. This meant that people didn't need to even visit the Twitter website to use it; they could instead use one of the many different clients. This open API approach has seen unpredictable and wide-ranging uses of Twitter, including use as a public log for activities such as running and weight loss, picture sharing services, data analysis, news and market trend monitoring, management of Twitter network, link shortening, archiving tweets, polling and so on.

Although Twitter is not open source, this open approach in terms of how people access it and what they use it for has allowed the network to grow and make it a default network for many different groups of people.

1.5 Community norms

![Hashtag](image)

**Figure 5 Hashtag**

Three key features of Twitter demonstrate how an open approach has allowed community norms to emerge. The first is the convention of putting an @ sign in front of a person's Twitter ID to send them a reply (e.g. @mweller). This was a user convention first of all, so it would designate that a particular tweet was for the attention of a particular user. As Twitter developed it became a standard convention, and then incorporated into the software, so now users can see all replies to them listed separately. The @ reply rule grew out of the email naming convention but has almost become synonymous with Twitter now.

The second convention was the use of hashtags to define a particular comment which could be grouped together. The use of the # was proposed by Chris Messina in a tweet:
'how do you feel about using # (pound) for groups. As in #barcamp [msg]?' Hashtags can be seen as metadata, describing the content of a tweet. They became relevant as the use of search on Twitter grew. People could search on a hashtag and thus gather all of the tweets on a particular topic. This was seized on by conferences, so all the delegates at a conference would agree to use a hashtag, and later conference organisers began specifying an official hashtag. Search was originally performed by a third-party service (using the open API), but in July 2008, Twitter bought Summize, the most popular Twitter search tool. Hashtags could now be incorporated into standard Twitter practice, and ‘trending’ became a relevant term as topics grew on Twitter, often denoted by a hashtag. Apparently the Twitter team initially rejected hashtags as ‘too nerdy’ (Gannes, 2010), but their simple, and unregulated, creation has allowed them to flourish.

Hashtags can now be used as the means to define a community, particularly around an event, course or topic. The open data approach of Twitter means that these can in turn be analysed to reveal connections between members, subjects of discussion, locations and prominent members (e.g. Hirst, 2010). As well as a useful means of categorising tweets, hashtags are now so ingrained in practice that they form a part of humour on Twitter, with people often creating ‘mock’ hashtags (although there are no official hashtags) as an ironic counterpoint.

The third norm to emerge is that of the retweet. This is the practice of passing on someone's tweet. Originally, this was achieved by copying and pasting the tweet and adding RT and the user’s ID at the start. Boyd, Golder and Lotan (2010) identify the following motivations for retweeting:

- to amplify or spread tweets to new audiences;
- to entertain or inform a specific audience, or as an act of curation;
- to comment on someone’s tweet by retweeting and adding new content, often to begin a conversation;
- to make one’s presence as a listener visible;
- to publicly agree with someone;
- to validate others’ thoughts;
- as an act of friendship, loyalty or homage by drawing attention, sometimes via a retweet request;
- to recognise or refer to less popular people or less visible content;
- for self-gain, either to gain followers or reciprocity from more visible participants; and
- to save tweets for future personal access.

As with the other community behaviours, the retweet became enshrined in code, when in late 2009 Twitter implemented a retweet function on its site. This allowed users to easily retweet a message by simply clicking a button, without the need for copy and paste, but some of the subtlety as to how it appears in timelines was lost (it is shown coming from the originator and not the retweeter).

What these three examples demonstrate is that the community has evolved over time, suggesting, experimenting and then adopting norms of behaviour – the ‘stickiness’ we saw with blog culture. Once it has become established, and proven to add value, Twitter has then moved to implement it in code to make it easier and also to further spread its use. It has not imposed the practice from the start, and sought to define how users will interact, which has often been the case with software development; instead it has allowed the community itself to develop its own norms.
1.6 Exploring Twitter

This activity offers an opportunity to investigate hashtags and how they are used on Twitter.

**Activity 1 Hashtags**
Allow about 20 minutes

If you are not familiar with the use of hashtags watch this short video before continuing.

Video content is not available in this format.

What is a hashtag?

(Note: if you don’t use Twitter, the discussion may be more difficult to follow. It is possible to look at Twitter without having an account, though.)

Spend this activity exploring how Twitter users use hashtags and how Twitter allows users to search for hashtags. Consider searching for hashtags that are associated with your institution (e.g. #openuniversity), discipline (e.g. #openeducation) or interests (e.g. #icehockey). Remember that anyone can create a hashtag or use it, so you might want to explore variations on these.

Make some notes and include these in your blog if you wish.

Provide your answer...
1.7 Interdisciplinary networks

Figure 6 Connections

If I analyse my own Twitter network (using the free service TwitterAnalyzer.com [NB This service is no longer available]) it reveals that the geographic spread of my followers is mainly across the following countries: United Kingdom, United States, Australia, Germany, Canada, France and China.

By analysing the biography details people provide the top professions amongst my followers are consultant, technologist, PhD student, lecturer, manager, teacher, librarian and author.

Amongst these I can identify a number of communities and networks, some of which will intersect. These include the following:

- **Bloggers** – many of the people I follow are those I already had an online connection with via blogs, and Twitter was an extension of this.
- **The Open University** – I have acted as an advocate for Twitter in the Open University and see it as a means of knowledge sharing within an organisation.
- **Cardiff** – I live in Cardiff, Wales, and there is an active Twitter community, which often meets face to face.
- **UK Higher Education** – As well as bloggers and Open University people there is a large contingent of peers in other universities, funding bodies, libraries and so on.
- **Journalists and media** – a number of journalists and media consultants use Twitter regularly.
Tottenham Hotspur – I support Spurs and a number of people I follow for this reason, but also there is a wider group for whom football is an interest (who are also members of the other networks).

There are a number of subgroups in this also; for example, Canadian bloggers form a coherent network of their own, and many individuals will occupy more than one category. One can view these many different groups and subgroups as networks that will become more or less active, and distinct, according to external events. For example, during the general election in the United Kingdom, this geographic grouping became more significant because there was a unifying theme. This is seen particularly with large, synchronous events such as the televised debates during the election.

Huberman, Romero and Wu (2009) have investigated interactions on Twitter and find that despite many followers the number of people a user interacts with (i.e. sends replies to) is relatively small. This reflects findings in Facebook and is interpreted as the existence of Dunbar’s number (1992). While this may well be true for the more stable relationships, the use of functions such as hashtags and retweets allows for a finer grading of online acquaintance. I can read, or retweet, someone else’s posts without ever interacting with them, and they may reciprocate, without engaging in direct conversation; yet these people form part of a valuable network.

1.8 Loose connections

Having made mention of Dunbar’s numbers this activity introduces them more fully.

Activity 2 Numbers
Allow about 20 minutes

Watch this short video of Robin Dunbar explaining what is meant by Dunbar’s number. If you are reading this course as an ebook, you can access this video here https://www.youtube.com/watch?v=ppLFce5uZ3I

How does this compare with your own experience? There has been some research that shows Dunbar’s numbers hold true online also (Konnikova, 2014). It is, however, easier to maintain a larger network of loose associations online. Consider how many online connections you have, and which of these you would fully classify as friends. Make some notes or post on your blog about this.

The implication of Dunbar research is often that face-to-face connections are more ‘real’ or meaningful in some sense. Increasingly scholars are finding meaningful connections online, particularly if they are working alone in a subject within their own institution. A good example of this is the Virtually Connecting group that have arranged for virtual participation in conferences (and hangouts) allowing people who may be excluded from
participating to feel part of the event. You can get a feel for this type of community by looking at some of their videos on YouTube.

1.9 Interdisciplinary Twitter

![Image of buttons]

Figure 7 The Twitter mixture

As an interdisciplinary tool the Twitter network has a number of advantages and associated issues.

**Geographical diversity** – while my network is inevitably centred on the United Kingdom and North America, it is a global community which brings together different perspectives. It is limited by language though, and the immediacy does not allow for translation, so there is a danger of English language views dominating.

**Professional diversity** – within the different networks a range of professions and experience can be found, which will inevitably bring a degree of interdisciplinarity. One of the benefits of Twitter has been to improve interdepartmental communication within an institution. However, while the list above shows a reasonable range of occupations, it is still largely centred on higher education. There are, for example, very few (or no) priests, builders, make-up artists or senior retail managers in my network (which is not to say they are not present on Twitter). For interdisciplinarity this may not be an issue.

**Size** – at the time of writing I follow about 1100 people and have approximately 3400 followers. That represents a considerable network and pool of expertise which will share a wide range of knowledge and will also respond to requests for advice on topics outside of my own domain.

**Immediacy** – one of the changes Twitter required in my behaviour was a shift from exhaustive reading to regular sampling. As a blog reader I tried to keep up with most posts.
from those I subscribed to, with subsequent guilt when the unread count on my blog reader mounted. As my Twitter network expanded this behaviour was not possible and so a shift was required, which means I ‘dip into’ Twitter, sometimes more intensively and other times I am completely absent. This is the concept of the stream; it is not meant to be consumed in its entirety but sampled on occasion. Twitterers are responding in real time, and thus it is ideal for capturing diverse reactions and interpretations before they are filtered into disciplines. There is a consequent danger though that this relentless churning of information means useful research will be missed via this route.

**Interdisciplinary bridges** – the ease of sharing provides a means to bridge disciplines, in particular the retweet can be viewed as a tool for bridging audiences and disciplines as a twitterer in one domain can rebroadcast to their network, which will have the types of subgroupings shown above.

**An inherent set of cultural norms** – the three features we saw above, as well as other practices, indicate that, as with blogs, Twitter has its own set of cultural norms, which provide the required ‘stickiness’ for communities to develop. These may be sufficient to overcome the differences in cultural norms across disciplines and provide a common framework.

**Professional and personal mix** – Twitter occupies an intersection between professional and personal, formal and informal, and resource and conversation. In many previous tools we have sought to separate out these elements; for instance, when we create forums for students in VLEs it is a common practice to have a separate ‘Chat’ or social forum so that this doesn't interfere with the academic discussion. However, this blend in one place in Twitter both provides motivation to partake (we don’t separate out our thoughts or lives so neatly) and also provides hooks into other areas of interdisciplinarity.

### 1.10 Making use of Twitter

In this activity you will consider how one academic has used Twitter as part of his digital scholarship.

#### Activity 3 Twitter as part of your personal learning network

*Allow about 10 minutes*

The following video was produced by Steve Wheeler in 2013 and discusses his personal learning network and the role Twitter plays in it. He also provides some tips on how to succeed with Twitter. Steve is Associate Professor of Learning Technologies at Plymouth University and is an advocate of the use of web 2.0 technologies in teaching, learning and research.

Watch the video and reflect on whether Steve’s practice matches your own or whether you might find his tips useful should you start using Twitter.

Write some notes or a blog post about your reflections.

*Video content is not available in this format.*

**Steve Wheeler: my personal learning network**
Provide your answer...
1.11 Possible issues

Figure 8 The Tower of Babel

One of the reservations regarding Twitter, and other forms of online community tools, is the possibility of an echo chamber, which is the antithesis of what is desired for interdisciplinarity. As the amount of information available increases, there is an argument
that it becomes more difficult to hear distinct and different voices. This occurs for two reasons: first, there is so much information arising from your immediate area of interest that it becomes difficult to keep up with this; second, it is now possible to find a group of like-minded people whatever your interests or tastes, so it is more emotionally ‘comfortable’ to spend time with these rather than with different voices. In a physical setting bounded by geographical constraints, one is more likely to be with a diverse group of people, but online the pool of people is larger so the grouping is more likely to be around interests and tastes than convenience or location. This is beneficial for many things; working with like-minded people often leads to quick development, but for interdisciplinarity it may create new types of boundaries. One can create a distorted view of what is a general consensus because dissenting voices are not heard. Of course, this is equally true (if not more so) with controlled media who will reflect certain positions.

The solution to the potential for the echo chamber to arise is to cultivate networks with a reasonable level of diversity and follow people who share diverse resources. It is not necessary to go to extremes in this for interdisciplinarity to be fostered but simply to ensure that there are some people who are in other disciplines and those who are in roles that cross boundaries.

The list above shows a number of benefits in developing a networked approach to interdisciplinarity, which may address the issues which have plagued it for many years. Indeed if researchers had intentionally set out to create a tool for promoting interdisciplinary discourse, then the resultant service may have not looked dissimilar to Twitter.

The extract from *The Digital Scholar* ends here.
2 Interdisciplinarity: on the rise or decline?

Figure 9 Open or not?
This week sets out possibilities for how social media can help reduce the barriers between disciplines, because it is relatively easy to make connections. However, as the number of people in a network increases it becomes more difficult to follow those beyond your own discipline. There is often talk of social media (such as Twitter) becoming something of an echo chamber. People tend to follow others who are similar to them and have similar interests. In this way digital scholarship works against increased interdisciplinarity.

There are possibilities for interdisciplinarity that digital scholarship affords however. For instance, it is relatively easy to establish a new journal now. One can use a blogging platform, or an open source journal system such as the Open Journal Systems. Prior to digital technology, establishing a journal was a costly business, and thus the economics needed to establish that there would be sufficient demand to justify print runs, distribution, and running costs. While it is by no means free to establish a journal now, it is cheaper, and easier. This makes the possibility of interdisciplinary journals which might have a limited market more viable.

Another aspect of digital scholarship that favours interdisciplinarity is open access publishing and the release of open data. Open access is usually interpreted to mean ‘free online access to scholarly works’, and openly licensed so it is also free from copyright constraints.

There are two main methods by which open access is realised:

*The gold route* – where the publishers make a journal (or an article) open access. For commercial publishers, fees received through the subscription model from library must be recouped, so an Article Processing Charge (APC) is levied. The gold route does not necessarily require APCs, however. That is just one model of making it viable.

*The green route* – where the author self-archives a copy of the article, either on their own site or increasingly on an institutional repository, such as the Open University’s Open Repository Online (ORO).

With the gold route, the emphasis stays with the journal, and with the green route, it shifts to the article, and repositories.

In many countries mandates have been established that state that the outputs of any publicly funded research should be published conforming to the open access ethos. The argument is that this work has been funded by the taxpayer, so they should have access to the findings. Similar mandates are arising now with the data relating to such research, so open data repositories are being established. This allows others to access the data.

This open approach allows for a degree of interdisciplinarity to arise through a number of routes. Firstly, open access publication means that those who do not subscribe to a particular journal because it is outside their discipline, can now access that work. Secondly, open data allows for different data sets to be combined, or used, in different ways. Lastly, open access journal articles can be combined from different disciplines into new combinations, because no cost is associated with doing so, thus creating an interdisciplinary intersection.

### Activity 4 Influences

Allow about 20 minutes

Consider the different influences, the ease and speed of sharing for example, on interdisciplinarity that arise as a consequence of digital scholarship, compared with your current exposure and experience of interdisciplinarity. Overall, do you think digital
scholarship leads to an increase in interdisciplinarity occurring? Or does it lead to some aspects being easier and others more difficult? Make notes or post on your blog.

Provide your answer...

3 This week’s quiz

Check what you’ve learned this week by taking the end-of-week quiz.

Week 3 quiz To view this content please access the complete course on OpenLearn
Open the quiz in a new window or tab then come back here when you’ve finished.

4 Summary

This week you have looked at how digital technologies might become embedded in scholarship and some of the ways in which this can reduce the barriers between disciplines. You have also been invited to consider whether open access publishing can also encourage interdisciplinarity.

Next week you will look at the third of Boyer’s scholarly activities: application.

Week 4: Introduction

The third of Boyer’s scholarly activities is known as ‘application’. This can be taking academic knowledge and applying it to a problem, working on committees, liaising with industry, etc. The particular focus you will take this week is that of public engagement.

The digital, networked environment offers many new routes to disseminate work, to engage with the public beyond the traditional channels of broadcast media, or writing popular books. Now through blogs, podcasts and social media the ability to communicate work to a broader audience has been democratised – as it is sometimes bluntly put, we are all broadcasters now.

Watch Martin Weller discuss this further:

Video content is not available in this format.

Week 4 introduction
By the end of this week you will have:

- gained an understanding of how digital, networked technology can influence public engagement
- considered how engaged research can be conducted
- reflected on how open approaches can be built into projects.

1 The long tail

Chris Anderson was the editor-in-chief of Wired Magazine. He wrote *The Long Tail* blog which first appeared in Wired in October 2004 and was then developed into a book. In the following video he explains what the long tail is and how it has become a relevant concept with the arrival of the internet.

Video content is not available in this format.
An explanation of the long tail
1.1 The tale of the tail

In March 2010 two of my network contacts (George Siemens and Dave Cormier) announced that they were running a short, free, online course about the future of the course and asked for contributions. One evening, I created a Slidecast with accompanying music for them to use. The production of this short presentation required approximately two hours’ worth of input, using images from Flickr with a Creative Commons licence. It didn’t ‘cost’ anything apart from the time investment, and the technical expertise required was minimal. Perhaps more significant was a familiarity with creating these types of presentations and feeling comfortable with sharing content.
The overall reach of any one such artefact may not compare with that of traditional broadcast outputs, but collectively we may see similar levels of impact. This is a good example of Anderson's long tail (2006). Traditional broadcasting can be seen as embodying the classic Pareto principle, which suggests that 20 per cent of your products account for 80 per cent of sales or views. These are the blockbusters. But as Brynjolfsson, Hu and Simester (2007) demonstrate when products move online the concentration of sales becomes more distributed. They compared a shopping catalogue with the online version of the same products and found that 'the internet channel exhibits a significantly less concentrated sales distribution when compared with the catalog channel, even though these two channels offer the same products at the same set of prices'. Being online encourages a more 'long tail' oriented set of behaviours. They further argue that as 'search costs' reduce, sales concentration becomes more skewed towards niche products. Search costs in this sense refer to the effort required by the individual, so the more experienced they become at searching, the more these costs decrease. This suggests that long-tail-type behaviour will continue to increase as people become more experienced at searching, evaluating and locating content that appeals to them.
1.2 Dissemination

If we consider the types of outputs generated in higher education, then it is possible to re-conceptualise universities as 'long-tail content production environments'. In Table 1 the range of content that universities can produce is listed, matched with some of the examples of the open, digital network outlets that might be used to disseminate them.

**Table 1 University content matched to open, distributed channels**

<table>
<thead>
<tr>
<th>Output</th>
<th>Type of outlet</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>Data repositories</td>
<td>RealClimate, Gene Expression Omnibus</td>
</tr>
<tr>
<td>Research paper</td>
<td>Open access journals, repositories, individual websites</td>
<td>Mendeley, Google Scholar, Open Research Online (ORO)</td>
</tr>
<tr>
<td>Software code</td>
<td>Open source repositories</td>
<td>SourceForge</td>
</tr>
<tr>
<td>Lectures/teaching content</td>
<td>OER projects, learning repositories, commercial sites</td>
<td>iTunes U, YouTube edu, MIT OpenCourseWare, SlideShare</td>
</tr>
<tr>
<td>Ideas, proposals</td>
<td>Individual sites</td>
<td>Blogs, Twitter, YouTube</td>
</tr>
<tr>
<td>Conferences, seminars</td>
<td>Conference sites</td>
<td>TED talks, YouTube, Twitter hashtag, Clouworks</td>
</tr>
<tr>
<td>Debate, discussion</td>
<td>Public engagement sites, subject community forums</td>
<td>Blogs, Twitter, discussion boards</td>
</tr>
</tbody>
</table>

This table includes some examples which may not, at first glance, seem like outputs, such as ideas and discussion. However, when an individual shares, or conducts, these via digital networked means, they become a shareable artefact. In open source communities,
the discussion forums are viewed as a valuable learning resource (Glott et al., 2008). Ideas and proposals, or suggestions, can be seen as a further example of the change in granularity in output. For example, my colleague Tony Hirst recounts how he suggested on Twitter that someone should take the Digital Britain report (a UK government proposal to develop the digital economy), break it into chunks and make it commentable. A response from Joss Winn led to them forming the company WriteToReply which does exactly this with consultation documents (Hirst 2009).

Potentially then higher education produces, as part of its everyday function, a large amount of long-tail content. All of the outputs listed above are unlikely to attract large audiences, but all of them are capable of gathering niche audiences, which collectively would fulfil a large element of a university's public engagement function.

This can be realised through specific projects, such as the OER projects many universities are initiating. However, long-tail models only work when there is sufficient content to occupy the tail. In order to achieve this scale of content in a sustainable manner, the outputs listed above need to become a frictionless by-product of the standard practice, rather than the outcomes of isolated projects.

1.3 Shifting to the digital

To return to the three key characteristics of [The Digital Scholar], what is required then to realise this frictionless generation of content is to embed the practices of generating digital, networked, open outputs. While many of the outputs in Table 1 are already in a
digital format (e.g. code and data), there is still a cultural and institutional change required in order to make these outputs open and networked. The open aspect can be addressed in one of two ways: the first is to have an institutional policy on open access, and the second is to encourage staff to adopt sharing practices.

Some universities have developed policies around open access of teaching and research content. Wiley (2009a) states that ‘as of July 2009, forty one organizations in the United States have open access mandates: seventeen at the institutional level, ten at the departmental level, four at the college level, and six at the funder level’. These policies are categorised as dealing with four main issues relating to open access:

- access (i.e., access to scholarly works by faculty, students, and administrators),
- cost (i.e., the price of continuing to subscribe to increasingly expensive journals),
- copyright (i.e., the common practice where faculty members relinquish their rights to the written work),
- and tenure (i.e., the manner in which current tenure review procedures consider open access publications).

(Wiley, 2009a)

The biggest shift though is likely to occur when we consider the outputs which are not necessarily digital in nature and make the shift to realising these in digital, shareable formats. This is only achievable through such practices becoming second nature for academics.

Two common objections to producing these types of output are money and time. In both cases I would argue that we underestimate the time and money we spend in many current wasteful activities, which we do not question because they are standard practice in the workplace. For example, meetings can be notoriously expensive, and often unproductive, if one takes into account all of the salaries involved, yet are perceived as a necessary evil in the modern university. As with lectures, though they are often disparaged, meetings can be useful and the best way to achieve certain goals, but as with lectures, they are also often uninspiring and ineffective. Holding virtual meetings is one approach (these can at least be recorded and shared if useful), but other means of achieving the same ends might be to share blog posts, brainstorm ideas in shared documents and so on.

Similarly keeping blogs is often seen as an additional activity, but it can be seen as a by-product of academic activity, such as keeping notes, working up ideas and so on. Clay Shirky (2008a) talking of cognitive surplus, recounts how a TV producer responded when he told her about Wikipedia:

She heard this story and she shook her head and said, ‘Where do people find the time?’ That was her question. And I just kind of snapped. And I said, ‘No one who works in TV gets to ask that question. You know where the time comes from. It comes from the cognitive surplus you’ve been masking for 50 years’.

The same might be true of generating outputs. The analogue methods of working may well be hiding the sort of cognitive surplus Shirky refers to. They don’t necessarily take extra time, but we have spent much of that time creating non-shareable resources. A small but indicative example is that when I used to attend conferences I was required to write a report on the conference which would go to the funding committee in my department but which would not be read by anyone else. Now I write a blog post, or create a Slidecast or make a YouTube video which is accessible to everyone. The shift is to producing an output which is shareable.
1.4 No/low cost penetration

Figure 4 Moving to frictionless broadcasting

The advantages of a move towards a frictionless long-tail model are largely related to costs and resources. Because its cost is free or relatively low, it means that, unlike large-scale projects or traditional broadcasting, there is no need to consider audience demographics, to establish specific projects (with the associated management costs) or to set objectives and goals. The result of this means that, taken as a whole, the university can embrace the kind of unpredictability that is at the heart of the internet, what Jonathan Zittrain (2008) refers to as ‘generativity’. Unpredictability is an undesirable goal for any specific project to have as an aim because budget allocation entails project objectives, measures of success, intended audiences and lines of responsibility. This is one of the areas of tension for universities (and other large organisations) with the internet culture – the project-focused method of working ingrained in many organisations is at odds with the bottom-up, unpredictable nature of internet innovation. There are two ways to address this; the first is to invest considerable amounts of money creating content which might take off and the second is to generate content at low cost as a by-product of normal operations.

A small, non-educational, example of this is that of the Downfall meme. These videos take the same segment of the (excellent) 2004 German film *Downfall*, when Hitler in his bunker rants against his imminent defeat. By overlaying different subtitles the first parody depicted his rage against being banned from Xbox Live. The ease with which it could be altered and the inherent comedy in seeing a despot savagely bemoan the unfairness of obscure topics led to it going viral. It generated thousands of reinterpretations and millions of hits, until the production company ordered a takedown notice of all parodies in 2010. In
this it exemplifies the unpredictability that can occur online and the creativity which can be unleashed.

Memes such as Downfall (and others such as ‘David After the Dentist’) are a rarity, however. It is not that large numbers of views or remixes are possible that is significant, but that unpredicted use and adoption can occur. Very small viewing figures are the norm in the long tail.

1.5 How the digital scholar contributes

Figure 5 Voice

If we consider public engagement from the perspective of the individual academic, then we can think of a continuum of possibilities. At one end would be relatively small-scale events such as a public lecture. This has a small, limited audience, but the filter is relatively open, in that many academics can at some point have an opportunity to deliver such a lecture. It is relatively low cost, with the venue often being provided free (as part of the university) and some refreshments. In the middle of our continuum we might place a general interest book. This will reach a larger audience, cost more to produce and have a stricter filter in place, in that publishers will determine who writes such a book. And at the opposite end of the continuum we can place broadcast activity, which is high cost, reaches a large audience and has a very fine filter with only a very small number of academics becoming broadcasters. The level of compromise or generalisation can also be seen to increase across this continuum, where with a public lecture the academic may speak in detailed terms about their subject, but with a general interest programme they are often required to ‘dumb down’ to an extent.

If we now consider the sort of digital outputs listed above, they have some similarity with these but also some areas of difference. They can be classified as follows:

- Low cost to free – if we assume they are by-products of activity which is already costed.
- Small but unpredictable audience – the long tail typically has small audiences but unexpected hits can occur.
- Open filter – anyone can publish.
- No compromise – with no associated cost the academic can be as general or detailed as they like.
• High reuse potential – the reuse potential of most other forms is low, either because they are in a format that is not reusable or copyright prohibits it, whereas small online artefacts can be easily aggregated into different contexts.

• Different distribution – such outputs are often distributed through search and social networks, so having a pre-established network is an important factor in seeding their uptake.

1.6 Creating digital content

Now we’re going to introduce you to some digital resources that exemplify the attributes we have been discussing.

Activity 1 An example of a long-tail artefact?
Allow about 20 minutes

The site True stories of open sharing was produced by Alan Levine and contains a number of short videos where people relate how open practice has led to some beneficial outcomes. Levine is a digital technologist who works with higher educational institutions to promote and develop the use of open, web-based methodologies. Select just one video to watch as an example. Most videos are quite short, around 90 seconds long, and were produced at home using a PC rather than expensive equipment and a costly set. After watching a video write down some ideas on subjects for short videos you might create as a by-product of your normal work. Your ideas need not be intended for a large audience but you might frame them as a response to a question from a peer or a student.

1.7 Creating the environment

Figure 6 A sense of independence
In order to encourage this frictionless type of output, universities can engage in several parallel functions. The first is staff development, although it is essential to promote a sense of independence, since most of the tools are very easy to use. Nevertheless what is often useful is a space, or allowance, that legitimises exploration with these tools, overcomes some initial concerns and establishes a peer support network. In the podstars project I ran at The Open University (Weller, 2010), which encouraged academics to start generating video outputs, these were the most common positive elements of the project. For example, this participant commented, ‘It gave me confidence to get on and try it. I am already using it in my research and indirectly I am using it for teaching, via communications to large cohorts of students on the science website’.

The emphasis on any staff development then should be on empowerment and liberation, rather than on training in specific software packages. The type of staff development required is probably located somewhere in between Google’s 20 per cent time, which developers can use to work on interesting projects, and the standard IT training courses, in that it needs some direction and technical support but is best served by allowing a diverse range of projects and encouraging creativity.

A second function for universities to perform is to remove obstacles, or perceived obstacles, to the production of such outputs. This will be most apparent in promotion criteria, which almost exclusively focus on traditional outputs such as journal articles. Related to the formal recognition of such outputs in promotion cases is the informal acceptance within an institution. The benefits of an open, digital, networked approach to research, public engagement and teaching need to be recognised by both senior management and colleagues and not dismissed as merely ‘playing’.

Lastly, although third-party sites such as YouTube are often the best tools at delivering such content, the provision of educational and institutional context is important, as it provides both recognition and increases the profile of the individual and institution. This might be in the form of a YouTube channel, an iPhone app, a university portal, a departmental blog, a newsletter and so on.

It is through these approaches that the cultivating environment which will encourage the bottom-up production of varied content will emerge. Given the potential benefits in profile, engagement and costs, these are relatively small changes to introduce.

The extract from The Digital Scholar finishes here.

1.8 Hearing the new voices

The public space is becoming open; more people than ever can broadcast their ideas.

Activity 2 Who is heard?
Allow about 30 minutes

Having read the extract, reflect on whether you feel the public space has become ‘democratised’. Do we get to hear new voices? If so, what sorts of people do we hear from now that we didn’t previously? Perhaps the old structures reassert themselves? If so, how do they do this? Note your reflections on your blog.
2 Engaged research

Digital scholarship not only allows different routes to disseminating research, but greater opportunities for involving people at every stage of the research process. These opportunities include: defining research questions so that are meaningful to the community interested in them; recruiting participants; sharing findings and thoughts throughout the process; and finally disseminating the results in ways that are accessible to all.

This type of approach is sometimes referred to as engaged, or open, research. At The Open University, Professor Rick Holliman has been an advocate of this approach, leading a project on developing an ‘open research university’. You can read the report of this project (Holliman et al., 2015), but it is not essential that you do so.

Activity 3 Including the digital approach
Allow about 30 minutes

Imagine that you are developing a research proposal that is examining the reading habits of the nation (you can choose a different example if you prefer). The funder is keen to have an engaged and open approach. How might you integrate this request into the research? Make some notes on your blog.

3 This week’s quiz

Check what you’ve learned so far in the course by taking the end-of-week quiz.

Week 4 quiz To view this content please access the complete course on OpenLearn
Open the quiz in a new window or tab then come back here when you’ve finished.

4: Summary

Adopting digital technologies offer a wider opportunity for engaging with peers around the world as well as the wider public. Digital artefacts are cheap/free to create; distributing and producing such artefacts might easily be accommodated in your normal workflow. Once created these digital resources are available to use in your teaching and learning and available to others for reuse. You will look at this abundance of content next week as well as some pedagogical responses to changes in the digital environment.

Next week you will focus on teaching – the last and arguably the most significant of Boyer’s categories.

Week 5: Introduction

Having looked at the creation of digital content as part of the core activities of a university it is time to look at one of those core activities. In this week you will be introduced to the last of Boyer’s scholarly activities, and arguably the one most directly affected by digital
scholarship, namely teaching. Digital scholarship allows educators to include different resources in their teaching, to use different pedagogic approaches, and to teach different audiences. The learner can engage with different types of content, communicate with people all over the globe, and produce new types of output. Watch Martin Weller discuss this further:

Video content is not available in this format.

Week 5 introduction

By the end of this week you will have:

- gained an understanding of different pedagogies and how they can take advantage of abundant content
- begun to appreciate the influence of the recent MOOC development.

1 Economics of abundance and scarcity

This week is based on Chapter 8 of *The Digital Scholar* and begins at page 57. The extract starts on the next page.
1.1 Scarcity

One perspective of relevance to teaching and learning is the effect that sudden, and great, abundance of learning content and resources has on how educators approach learning. There is an obvious relation to economics here. Traditional economics can be viewed as a study of the impact of scarcity. In his 1932 essay Robbins defined economics as ‘the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses’.

But when goods become digital and available online then scarcity disappears. They are non-rivalrous so that if a copy is taken, it is still available for others. They are distributed free on a global scale (if we ignore infrastructure costs which apply to all content). When analysing the lessons from other industries the problems they have faced can be viewed as essentially making a transition from an economics of scarcity to an economics of abundance. If the music industry is considered from this perspective then the traditional model can be said to have been based around the following assumptions:

- talent is scarce
- locating it is difficult
- content is physical
- content is manufactured according to demand
- access to it is scarce

What follows from this set of assumptions is the structure of the entire industry. Talent is discovered by Artists and Repertoire (A and R) agents, who spend their time attending concerts, building networks and talking with bands to find new talent. Once discovered
artists are signed exclusively to a label, who then record their content and produce this in a physical format. This is then distributed via a logistics network to a chain of shops. With limited opening hours, the consumer could then go to the shop to purchase the item, if it was in stock, or order it if not, because storage space would be limited. After a period, depending on popularity, the item would cease to be produced and become available only via second-hand record shops.

1.2 Eroding scarcity

This model seems antiquated already, and yet it is one of recent history. The first ‘attack’ it suffered was that of online ordering, through the likes of Amazon. The small storage space of the local record shop was no longer a limiting factor, and entire back catalogues were available at the click of a mouse. The necessity of travelling to the shop was removed, and although there was no restriction on when you ordered, there was still a delay in receiving the physical goods.

The changes brought by the advent of online shopping were significant, but essentially it was the same model for the music industry but with an improved shop front. The structural change to the industry arose when the format of music changed to the digital file, which could be freely distributed online. In this model talent is still scarce, but the act of locating it has changed. The artists can promote themselves; listeners locate music through routes such as LastFM and playlists without the intervention of a record label. For the consumer the availability of music is instant, the granularity alters, and if the individual uses bit-
torrent-type downloads then entire back catalogues are as easily downloaded as one track. This changes the consumers’ relationship to content; their own time and attention become the key scarce resources now.

Responses to the digital era can be classified as ‘abundance’ and ‘scarcity’ responses. The former takes the assumption of new abundance and tries to work it to their advantage. The Freemium model is one such example, as realised by Flickr, for example. Here users get a good level of service free, to attract sufficient numbers. The additional value that requires payment only attracts a small percentage of users (estimates vary between 5 and 10 per cent of Flickr users who convert to ‘Pro’ customers), but with a large base it becomes significant. As Chris Anderson (2008) puts it, Freemium as the opposite of the traditional free sample: instead of giving away 1% of your product to sell 99%, you give away 99% of your product to sell 1%. The reason this makes sense is that for digital products, where the marginal cost is close to zero, the 99% cost you little and allow you to reach a huge market. So the 1% you convert, is 1% of a big number.

Chris Anderson also coined the term ‘long tail’ and this too can be viewed as an ‘abundance response’. The long tail argues that with an abundant stock range, businesses make money not by selling large quantities of a few items (the blockbusters) but by selling small quantities of a large number of items.

Other models include giving away the digital object free, and where one exists, charging for the physical object. This is a model being explored by publishers such as Bloomsbury Academic. Where no physical object exists, then it is associated services which attract a cost; for example, while many users download and install open software solutions freely, a small number are willing to pay for consultancy services around these. The most widely deployed abundance response is to use advertising revenue to allow free access to content. It still remains to be seen how successful many of these approaches will be; these are after all, transitory times.

Scarcity responses, however, seek to re-establish, or retain, the existing economic model by introducing scarcity into the digital content. An obvious example is that of digital rights management (DRM), which attempts to encode legislation and usage within the content itself. For example, iTunes limits the number of computers that you can have accounts on and restricts the devices you can associate with an iTunes account. DRM is often backed up with strong legal enforcement, where we have seen recent examples of the founders of torrent sharing site Pirate Bay being fined 30 million Swedish kronor and receiving a jail sentence for encouraging illegal file sharing. In the United Kingdom, the Digital Economy Act was passed in 2010, which will identify copyright infringements and then require the user’s internet service provider to issue a notice. In many of the arguments put forward for such approaches analogies are made to rivalrous, scarce goods or services; for example, Paul McCartney, commenting on the Pirate Bay case, said ‘if you get on a bus, you’ve got to pay. And I think it’s fair, you should pay for your ticket’. Paywalls and subscription models can also be seen as an attempt to re-establish the scarcity of content.

1.3 Free or for-fee

Scarcity responses can change the way in which users engage with digital services. In this activity you are invited to think about your own experiences.
Activity 1 Where are you?
Allow about 20 minutes

How you respond to any discussion about free or for-fee services will be influenced by your own experience of the digital world. Take some time to consider the services you use and whether they are free or paid for. Have you ever used a resource where you weren’t sure of its origins and licence (for example an image)? Does your internet service provider prevent you from visiting certain websites? If you create digital artefacts would you make them freely available?

Make some notes or post on your blog.

Provide your answer...

1.4 Education and abundance

Figure 3 Welcome to the Cornucopia

In examining the changes that education needs to accommodate to be relevant to the digital society, Seely-Brown and Adler (2008) emphasise the shift to participation, arguing that in order to meet the growing demand for education, and the requirements of a rapidly changing workplace, the traditional model of supply-push needs to be replaced with one of demand-pull. Learners need to be able to learn throughout their lives and to be able to
learn about very niche subjects (Anderson’s long tail again). The only way to accommodate these needs they argue is to move to a more participatory, socially constructed view of knowledge. They stress the significance of new technologies in realising this:

Tools such as blogs, wikis, social networks, tagging systems, mashups, and content-sharing sites are examples of a new user-centric information infrastructure that emphasizes participation (e.g., creating, re-mixing) over presentation, that encourages focused conversation and short briefs (often written in a less technical, public vernacular) rather than traditional publication, and that facilitates innovative explorations, experimentations, and purposeful tinkerings that often form the basis of a situated understanding emerging from action, not passivity.

Any pedagogy of abundance would then, I suggest, be based on the following assumptions:

- Content is free – not all content is free, but increasingly a free version can be located and so an assumption that this will be the default is more likely than one based on paywalls or micropayments.
- Content is abundant – as covered above, the quantity of content is now abundant as a result of easy publishing formats and digitisation projects.
- Content is varied – content is no longer predominantly text based.
- Sharing is easy – as I have suggested, there are now easy ways to share, so the ‘cost’ of sharing has largely disappeared.
- Social based – this may not necessarily entail intensive interaction; filtering and sharing as a by-product of individual actions constitutes a social approach to learning.
- Connections are ‘light’ – as with sharing, it is easy to make and preserve connections within a network since they do not necessitate one-to-one maintenance.
- Organisation is cheap – Clay Shirky (2008b) argues that the ‘cost’ of organising people has collapsed, which makes informal groupings more likely to occur and often more successful: ‘By making it easier for groups to self-assemble and for individuals to contribute to group effort without requiring formal management, these tools have radically altered the old limits on the size, sophistication, and scope of unsupervised effort’.
- Based on a generative system – Zittrain (2008) argues that unpredictability and freedom are essential characteristics of the internet and the reason why it has generated so many innovative developments. Any pedagogy would seek to harness some element of this generative capability.
- User-generated content – related to the above, the ease of content generation will see not only a greater variety of formats for content but courses being updated and constructed from learner’s own content.
1.5 Possible pedagogies

As Conole suggested, there are a number of pedagogies which meet some of these assumptions. In this section some of the contenders for a pedagogy of abundance are examined.

Resource-based learning (RBL)

This places resources in the foreground of learning, and the learner's interaction and selection of these (which may include human resources) is the driving principle. Ryan (2000) uses the following definition for RBL, taken from the Australian National Council on Open and Distance Education. RBL is ‘an integrated set of strategies to promote student centred learning in a mass education context, through a combination of specially designed learning resources and interactive media and technologies’. If one views the abundance of resources as the primary factor in a pedagogy of abundance then RBL looks like an appropriate strategy. I would suggest that it is often still grounded in a scarcity approach, however; for example, Ryan goes on to argue that ‘these integrated strategies for RBL should be based on the application of a range of instructional design principles to the development of learning materials’. In a world of abundance the emphasis is less on the development of specific learning materials than on the selection, aggregation and interpretation of existing materials.
Problem-based learning (PBL)

Barrows and Tamblyn (1980) summarise PBL as ‘the learning that results from the process of working toward the understanding or resolution of a problem. The problem is encountered first in the learning process’. In PBL students are given an ill-structured or open-ended problem. They work often in small collaborative groups towards a solution, but often there is no definite answer. The role of the teacher is one of facilitator, helping groups if they get stuck, providing useful resources and advice. In medical education in particular, PBL has been well researched and there has been some modest evidence that it is more effective than traditional methods (Vernon and Blake 1993; Smits, Verbeek and de Buisonjé 2002), so it has a solid grounding. With its emphasis on learner direction, use of diverse resources and open-endedness it meets many of the requirements set out above. As with RBL it may need recasting to fully utilise the new found abundance of content, where there is greater stress on finding and evaluating wide range of resources, and the utilisation of social networks as a resource.

Constructivism

This theory of learning gained much popularity in the 1990s, particularly with the advent of elearning. It is a view of learning that places the focus on individual learners who constructs their own knowledge through activity. Jonassen (1991) describes it thus:

Constructivism … claims that reality is constructed by the knower based upon mental activity. Humans are perceivers and interpreters who construct their own reality through engaging in those mental activities … What the mind produces are mental models that explain to the knower what he or she has perceived … We all conceive of the external reality somewhat differently, based on our unique set of experiences with the world.

In practice this has been realised as courses which often have a strong group, discursive and reflective component, with the emphasis on individuals to develop their own interpretations, with the educator in less of a teacher role and acting more as a facilitator. Given that it has a loose definition, it is hard to pin down a constructivist approach exactly. Mayer (2004) suggests that such discovery-based approaches are less effective than guided ones, arguing that the ‘debate about discovery has been replayed many times in education but each time, the evidence has favoured a guided approach to learning’. It could be argued that with everyone able to publish content in a Web 2.0 world, the ‘dangers’ inherent in constructivism become more pronounced, as the proliferation of conspiracy theories might attest. However, given that this is the environment everyone has to operate within, the ability to construct appropriate and rigorous knowledge from a range of sources is even more relevant. When Kirschner, Sweller and Clark (2006) claim, with some justification, that ‘the epistemology of a discipline should not be confused with a pedagogy for teaching/learning it’ that only highlights that the epistemology of a discipline is now being constructed by all, so learning how to participate in this is as significant as learning the subject matter of the discipline itself.
1.6 Communities of practice

Lave and Wenger's (1991) book on situated learning and Wenger's (1998) influential book on communities of practice highlighted the social role in learning and the importance of apprenticeship. They proposed the concept of 'legitimate peripheral participation', whereby participants move from the periphery in a community to its core by engaging in legitimate tasks. A very practical example of this is seen in open source communities, where participants move from reading and occasionally commenting in forums to suggesting code fixes and taking on a range of functions such as moderation and code commenting. Crowston and Howison (2005) propose a hierarchical structure for FLOSS communities, consisting of the following layers:

1. At the centre are core developers, who contribute the majority of the code and oversee the overall project.
2. In the next layer are the co-developers who submit patches, which are reviewed and checked in by core developers.
3. Further out are the active users who do not contribute code but provide use-cases and bug-reports as well as testing new releases.
4. Further out still are the many passive users of the software who do not contribute directly to the main forums.

Bacon and Dillon (2006) suggest that some of the practices seen in open source communities can be adopted by higher education, in particular, the process of peer-production and the situated method of teaching and learning. With its practical approach, self-direction, user-generated content and social aspect, the communities of practice
approach as realised in open source provides an interesting model, since it devolves much of the work to a community, from which all benefit. However, the number of successful open source communities is relatively small compared with the number of unsuccessful ones, and thus the rather tenuous success factors for generating and sustaining an effective community may prove to be a barrier across all subject areas. Where they thrive, however, it offers a significant model which higher education can learn much from in terms of motivation and retention (Meiszner 2010).

1.7 Connectivism

Figure 6 Connections

This is a learning theory proposed by George Siemens (2005). Of the theories listed here it is the only post-network theory, which has as its starting assumption the Internet and the mass of connections we establish. As Siemens states, ‘Learners as little as forty years ago would complete the required schooling and enter a career that would often last a lifetime. Information development was slow. The life of knowledge was measured in decades. Today, these foundational principles have been altered. Knowledge is growing exponentially’. Connectivism then stresses that learning takes place within a network. The following are the principles of connectivism:

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialised nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known.
- Nurturing and maintaining connections is needed to facilitate continual learning.
• Ability to see connections between fields, ideas and concepts is a core skill.
• Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
• Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Connectivism can be seen as an approach to learning that foregrounds the significance of the network and connections. Using its principles Downes and Siemens have run large-scale open online courses. Given its starting assumption it is probably closest to a pedagogy of abundance, but it is still relatively new and, while it sets out some clear principles and draws on other theories, it is not yet fully formed as a pedagogic theory. The extract from The Digital Scholar ends here.
2: MOOCs

The book *The Digital Scholar* was written before the advent of massive open online courses (MOOCs). MOOCs are a good example of the way in which teaching can be influenced by the possibility of digital scholarship, and also how that can be seen as both a positive and negative development.
There was a coalescence of interest in running open courses from a number of people, including David Wiley and Alec Couros, associated with the open education movement in around 2007. The title of first MOOC, however, is often given to Connectivism and Connective Knowledge (CCK08), run by George Siemens and Stephen Downes, in 2008. It was commentary on this course that gave rise to the term MOOC, jointly attributed to Dave Cormier and Bryan Alexander.

What characterised these early MOOCs was an interest in the possibilities that being both open and networked offered. The subject matter of these early courses was related to the mode of presentation, so courses were in topics such as open education, digital identity or networked pedagogy. As with early elearning courses, which would often be about the subject of elearning itself, these early stages of experimentation focused on subjects where the medium was the message. As with elearning, this soon broadened out to encompass a much wider range of topics.

Another characteristic of these early MOOCs was that they were associated with individuals, not institutions. They were seen as George and Stephen’s course, rather than a Stanford or Massachusetts Institute of Technology (MIT) course. This meant that they were experimental in terms of technology, both by necessity and design. These MOOCs used a combination of open technologies, such as WordPress and Twitter. Learning to use these tools and to make connections across the open internet was seen as a key aim for these early MOOCs.

In 2011, MOOCs took a very different turn when Sebastian Thrun launched the Stanford Artificial Intelligence course, with over 120,000 enrolled learners. This attracted much attention from the media and venture capitalists. With the cost of formal education soaring, the idea that you could take courses from the top universities for free seemed irresistible. Harvard and MIT created EdX, Coursera was launched by Daphne Koller and Andrew Ng (with venture capital funding) and Thrun founded Udacity. The year 2012 was deemed ‘Year of the MOOC’ by the New York Times (Pappano, 2012) as most major US universities signed agreements with the MOOC providers to offer courses on their platforms or launched platforms of their own. MOOC mania was not restricted to North America: in the United Kingdom, The Open University launched FutureLearn in 2013; in Germany it was iVersity; and in Australia, Open2Study. Coursera is the most prominent of the MOOC providers, and it has over 500 courses from 107 universities and over 5 million learners enrolled (Protalinski, 2013). The pace of uptake, hype and development seemed breathless in comparison with most educational projects.

These new MOOCs were very different from the early ones pioneered by the open education movement. They tended to be institutional, based on a proprietary platform and driven by a strongly instructivist pedagogy. Whereas the initial MOOCs had emphasised the importance of networking, many new MOOCs were focused on video instruction and automatic assessment. The distinction was made between cMOOCs for the early, connectivist type MOOCs and xMOOCs for the new, didactic models (Siemens, 2012).

Since then there has been much debate about the financial sustainability of MOOCs, whether they can support all learners, the damage of the hype to education, and so on. This has led to something of a backlash against MOOCs.

In this video one of the founders of MOOCs, George Siemens, provides an overview of how MOOCs evolve the role of teachers:

Video content is not available in this format.

How MOOCs evolve the role of teachers
2.1 Pedagogies for abundance

The extract focuses on just one aspect of how teaching is affected by digital scholarship: abundant content. Several pedagogical approaches are listed as ways of making the most appropriate use of this abundance.

Activity 2 Your favoured approach
Allow about 30 minutes

Having read the extract do you favour one pedagogy as the best approach for taking advantage of abundant content? If, so, which one and why? If not, why not? Share your thoughts on your blog or make some notes.

Provide your answer...

3: This week’s quiz

Check what you’ve learned this week by taking the end-of-week quiz.
Week 5 quiz. To view this content please access the complete course on OpenLearn
Open the quiz in a new window or tab then come back here when you’ve finished.
4: Summary

This week you have looked at how digital scholarship offers educators access to a wide range of different resources as well as opportunities to adopt different pedagogical approaches. Learners can engage and collaborate to create new resources, without regard to geography.

Next week you will consider how digital scholarship might be recognized by institutions; an important part of an academic’s life.

Week 6: Introduction

One reservation about digital scholarship that often arises is that whilst engaging in activities such as blogging, or using social media may be rewarding personally, it is not recognised by institutions. If you wish to progress in a career as an academic, the emphasis is on traditional activities still, such as publishing articles in recognised journals. It is this relationship with reward and tenure that we will examine this week.

Watch Martin Weller discuss how scholarly work is recognised:

Video content is not available in this format.

Week 6 introduction

By the end of this week you will have:

- gained an understanding of how digital scholarship might be recognised for tenure
- an appreciation of how digital scholarship and traditional scholarship can be complementary practices.
1: Recognition and reward

This week is focused on Chapter 11 and starts from page 82. The chapter sets out some problems in recognising and rewarding digital scholarship, and also some methods by which it might be recognised. As you read consider the following questions: what is your view? Should we find ways of rewarding these non-traditional types of activity? If so, how might institutions do it in a way that is robust, and isn’t open to gaming, or manipulation?

In the following video Martin Weller discusses issues of the use of digital scholarship with two PhD students and how it can be used for early career researchers.

Video content is not available in this format.
Research interview
1.1 Recognising digital scholarship

The response to recognition of digital scholarship can take a variety of forms, some more radical than others. The approaches can be summarised as follows:

- recreating the existing model
- finding digital equivalents
- generating guidelines that include digital scholarship
- using metrics
- peer review
- micro-credit
- developing alternative methods

Each form will be considered here.
Recreating the existing model

Figure 2 Open access

If we take these in order, recreating existing models is a reasonable first step. Methods of recreating the existing model in digital scholarship terms include adding in a layer of peer review to blog-like practices or making conventional journals more open. For instance, a number of journals now operate a model where the author (or more likely, the author’s institution) pays to have an article made open access. Publishers charge between $500 and $3,000 for this model, and as Waltham (2009) reports take-up has been limited with 73 per cent of publishers reporting 5 per cent or less adoption of this model. This is hardly surprising and highlights one of the problems with attempting to recreate current practice. We will look at the economics of the academic publishing industry in more detail later, but given that scholars have provided the writing, editing, and reviewing time free of charge, it seems somewhat unlikely that they will then pay to have the article published online, when it can be done freely by their own means. An attempt then to graft the open, digital, networked approach onto existing practice and then continue as normal fails to address many of the more fundamental issues and also the possibilities afforded by the new technologies.
Digital equivalents

An improvement on this is to seek digital equivalents for the types of evidence currently accepted in promotion cases. In making a case for excellence in one of the three main promotion criteria, the scholar is required to provide evidence. We have become so accustomed to many of these forms of evidence that we have ceased to view them as evidence but rather as an endpoint in themselves. For example, a good track record in peer-review publication should not be the ultimate goal, but rather it is indicative of other more significant contributions including effective research as judged by your peers, impact upon your subject area and scholarly communication. Thus if we examine what each of the accepted pieces of evidence are seen to represent, and assuming these are scholarly values we wish to perpetuate, then it may be possible to find equivalents in an open, digital, networked context which demonstrate the same qualities. For example, the keynote talk at a conference is often cited as one valid piece of evidence of esteem for an individual seeking promotion. The reasons are twofold: Reputation – it demonstrates that they have gained significant standing in their field to be asked regularly to give a keynote talk at a conference; impact – if they are giving the keynote then everyone at the conference hears it, and they can therefore claim a significant impact in their subject.

The important element then is not the keynote itself but what it signifies. What might a digital equivalent of this be which meets the two criteria above? For example, if someone gives a talk and converts this to a slidecast of that presentation, a certain number of views might equate to impact (how many people would hear a live presentation?). If the presentation is retweeted, linked to, embedded, then this might give an indication of reputation.
It would be overly simplistic to provide straightforward translations along the lines of 500 views + 5 embeds = 1 keynote, but by focusing on the existing criteria and considering what it is they are meant to demonstrate, it is then possible to consider online equivalents. The New Media Department at the University of Maine has taken a similar approach in suggesting a number of ‘alternative recognition measures’ (Blais, Ippolito and Smith, 2007):

- Invited/edited publications – if an individual is invited to publish in an online journal that is an indication of reputation.
- Live conferences – they suggest raising the profile of the conference (both face to face and virtual) to a par with peer-review publication, particularly in fast-moving subjects.
- Citations – they suggest using Google and databases to find a better measure of citations and impact.
- Download/visitor counts – downloads of articles or visits to an academic site can be seen as equivalent to citations.
- Impact in online discussions – forums, discussion lists and blogs are ‘the proving grounds of new media discourse’ with significant impact and a high degree of scrutiny and peer evaluation.
- Impact in the real world – this might be in the form of newspaper references but they also argue that Google search returns can be a measure of real-world impact.
- Net-native recognition metrics – online communities can have their own measures of value, and these represent a more appropriate measure than one imposed upon the contributor from outside.
- Reference letters – they suggest reference letters which may counteract some of the difficulty with traditional recognition systems.

The Faculty of the Humanities at the University of Nebraska-Lincoln have similarly developed a set of specific equivalents for recognition, including links to the scholar’s research, peer review of digital research sites and technical innovation.

**Activity 1 Using the alternative measures**  
Allow about 30 minutes

Looking at the list on the previous page, assess your online reputation or the profile of someone you know – perhaps ‘high-profile’ academics in your field or a field of interest. What have you learnt about the people you have looked at? Is their reputation/profile as you might have expected?

Make some notes and perhaps share them on your blog.
Digital scholarship guidelines

These recommendations specify a number of approaches to recognising digital scholarship activity. A more common approach is to produce more general guidelines which set out broader criteria for assessing the quality of scholarly activity. These can include a catch-all term to accommodate new forms of outputs, for example, the Open University promotion guidelines state that ‘other appropriate outputs from scholarship can be taken into account including a demonstrable influence upon academic communication mediated through online and related web mediated technologies that influences the discipline’.

The Committee on Information Technology of the Modern Languages Association (MLA) has developed its own guidelines for promotion committees to consider when dealing with digital media in the modern languages:

- Delineate and communicate responsibilities. When candidates wish to have work with digital media considered, the expectations and responsibilities connected with such work and the recognition given to it should be clearly delineated and communicated to them at the point of employment.
● Engage qualified reviewers. Faculty members who work with digital media should have their work evaluated by persons knowledgeable about the use of these media in the candidate's field. At times this may be possible only by engaging qualified reviewers from other institutions.

● Review work in the medium in which it was produced. Since scholarly work is sometimes designed for presentation in a specific medium, evaluative bodies should review faculty members’ work in the medium in which it was produced. For example, web-based projects should be viewed online, not in printed form.

● Seek interdisciplinary advice. If faculty members have used technology to collaborate with colleagues from other disciplines on the same campus or on different campuses, departments and institutions should seek the assistance of experts in those other disciplines to assess and evaluate such interdisciplinary work.

● Stay informed about accessibility issues. Search, reappointment, promotion and tenure committees have a responsibility to comply with federal regulations and to become and remain informed of technological innovations that permit persons with disabilities to conduct research and carry out other professional responsibilities effectively.

Some of these will seem like common sense, for example, reviewing work in the medium in which it was produced, but even such a small step may come up against opposition when there is a strictly regulated promotion process which has been designed to suit the needs of print outputs.
One approach to overcoming, or at least easing, the complexity of judging individual cases is the use of metrics or statistical calculations to measure impact or influence. This has been an area of increasing interest even with traditional publications. This measure of impact is often represented by a statistical measure such as the ‘h-index’, which is based upon bibliometric calculations of citations using a specific set of publisher databases. This measure seeks to identify references to one publication within another giving ‘an estimate of the importance, significance, and broad impact of a scientist’s cumulative research contributions’ (Hirsch, 2005). Promising though this may sound it is a system that can be cheated, or gamed (Falagas and Alexiou, 2008), for instance, by authors referencing previous papers or between groups, and so a continual cycle of detecting such behaviours and then eliminating them is entered into, rather akin to the battle fought between computer-virus makers and antivirus software. The Research Excellence Framework (REF) examined the potential of using such measures as a part of the assessment process and found that currently available systems and data were ‘not sufficiently robust to be used formulaically or as a primary indicator of quality; but there is considerable scope for it to inform and enhance the process of expert review’ (HEFCE, 2010).

There are at least three further degrees of separation from this walled garden approach to citations. The first is to use data outside of a proprietary database as a measure of an article’s impact. This ‘webometrics’ approach was identified early on as offering potential to get richer information about the use of an article, by analysing the links to an article, downloads from a server and citations across the web (e.g. Marek and Valauskas, 2002).
Cronin et al. (1998) argue that this data could ‘give substance to modes of influence which have historically been backgrounded in narratives of science’.

The next step is to broaden this webometrics approach to include the more social, Web 2.0 tools. This covers references to articles in social networks such as Twitter and blogs, social bookmarking tools such as CiteULike and recommendation tools such as Digg (Patterson, 2009). This recognises that a good deal of academic discourse now takes place outside of the formal journal, and there is a wealth of data that can add to the overall representation of an article’s influence.

The ease of participation, which is a key characteristic of these tools, also makes them even more subject to potential gaming. As Priem and Hemminger (2010) report, there are services which can attempt to increase the references from services such as Digg to a site (or article) for a fee. But they are reasonably optimistic that gaming can be controlled, proposing that ‘one particular virtue of an approach examining multiple social media ecosystems is that data from different sources could be cross-calibrated, exposing suspicious patterns invisible in single source’.

A more radical move away from the citation work that has been conducted so far is to extend metrics to outputs beyond the academic article. A digital scholar is likely to have a distributed online identity, all of which can be seen to represent factors such as reputation, impact, influence and productivity. Establishing a digital scholar footprint across these services is problematic because people will use different tools, so the standard unit of the scholarly article is lacking. Nevertheless one could begin to establish a representation of scholarly activity by analysing data from a number of sites, such as the individual’s blog, Twitter, Slideshare and YouTube accounts, and then also using the webometrics approach to analyse the references to these outputs from elsewhere. A number of existing tools seek to perform this function for blogs; for example, PostRank tracks the conversation around blog posts, including comments, Twitter links and delicious bookmarks. These metrics are not without their problems and achieving a robust measure is still some way off, but there is a wealth of data now available which can add to the overall case an individual makes.
Peer review

Figure 6 Reaching a higher step

The issue of gaming is even more prevalent with metrics, and this is confounded by the mix of personal and professional outputs which are evident in many of these tools. This brings us onto the next approach in recognising digital scholarship, which is the use of peer-assessment. When the filter of peer-review publication is removed, or lowered in significance, then arguably the significance of peer review in the tenure process increases. It will be necessary to determine that the output and activity are indeed scholarly (after all, one could have a popular blog on bee-keeping which had no relevance to your position as professor of English Literature). It is also a response to the increased complexity of judging digital scholarship cases. The MLA guidelines above recommend using external experts to perform this peer review for tenure committees who may be unfamiliar with both the subject matter and the format.

Others have taken this approach further, soliciting commendations from their wider online network (e.g. Becker, 2009). There is obviously an issue around objectivity with this approach, but as promotion committees seek to deal with a wider range of activity and outputs, judging their impact will need to involve feedback from the community itself.
In the section on research, I suggested that new methods of communication have allowed a finer granularity of research, that in effect the dissemination route had an influence on what could be deemed research. This finer granularity, or shift to process away from outputs, is another difficulty for recognising digital scholarship. One approach may be to shift to awarding ‘micro-credit’ for activity – so, for example, a blog post which attracts a number of comments and links can be recognised but to a lesser degree than a fully peer-reviewed article. Finer granularity in the types of evidence produced would allow recognition of not just outputs but also the type of network behaviour which is crucial to effective digital scholarship. Smith Rumsey (2010) suggests that ‘perhaps there should be different units of micro-credit depending on the type of contribution, from curating content to sustaining the social network to editing and managing the entire communication enterprise of a collaborative scholarly blogging operation’.
Alternative methods

The last of the approaches to recognising digital scholarship is really a call to encourage new practices which seek to reimagine scholarship. The seven approaches suggested above can be viewed as a continuum of departure from the conventional model. Much of the attempts to gain recognition for digital scholarship seem to be focused around making it behave like traditional scholarship; for example, permitting webometric data for journal article analysis is interesting, but it still foregrounds the peer-reviewed article as the main form of evidence.

Bending new technology to fit existing practice is a common reaction, partly because we are unaware of its potential. Stephen Heppell (2001) declares that ‘we continually make the error of subjugating technology to our present practice rather than allowing it to free us from the tyranny of past mistakes’. There is something of this in the approach to recognising digital scholarship – it is often a case of trying to make everything fit into the pre-existing shaped containers, rather than exploring new possibilities.

Promotion committees can play a significant role in this not only by recognising new forms of scholarship but also by positively encouraging them, either through guidelines or through specific projects. For example, a committee might seek to develop the sort of Web 2.0 metrics mentioned above or to encourage alternatives to the peer-review model. In analysing the peer-review process Fitzpatrick (2009) makes a strong case that we need to move beyond merely seeking equivalence measures:

> What I am absolutely *not* arguing is that we need to ensure that peer-reviewed journals online are considered of equivalent value to peer-reviewed journals in
print; in fact, I believe that such an equation is instead part of the problem I am addressing. Imposing traditional methods of peer review on digital publishing might help a transition to digital publishing in the short term, enabling more traditionally minded scholars to see electronic and print scholarship as equivalent in value; but it will hobble us in the long term, as we employ outdated methods in a public space that operates under radically different systems of authorization.

The extract from *The Digital Scholar* ends here.

2 Best of both worlds

![Figure 9 Both together](image)

Digital and traditional scholarship are often spoken about as if they are in competition with one another – the suggestion being that an individual can focus on one or the other, but not both. This need not necessarily be the case, as the two can be seen as complementary. For instance, there is evidence that publishing articles in open access journal leads to higher citations, which is termed the Open Access Citation Advantage (a list of publications reporting this can be found at [SPARC Europe, The Open Access Citation Advantage: Summary of results of studies](https://www.sparc.org/open-access/articles/)). Similarly, the use of Twitter to disseminate articles can predict, and maybe lead to, higher citations (Journal of Medical Internet Research). Increasingly, the development of an online identity by academics, through blogs, social media or other means, is becoming as important, if not more so, as their ‘traditional’ identity. This online identity can lead to ‘real
world’s impacts such as collaborations on research projects, invites to give talks at conferences, recruitment of participants for research, teaching collaborations and so on. Even if the traditional measures of reward are adhered to, there are digital scholarship effects on these. However, many scholars feel they are required to play ‘both games’ in order to be recognised. This article at Vitae (Dunn, 2014) sets out how scholars in digital humanities feel they have to do twice the work.

2.1 Recognition

The extract from The Digital Scholar has laid out a number of approaches and issues surrounding the recognition of digital scholarship. This activity asks you to reflect on the approaches outlined.

Activity 2 Which approach works?
Allow about 30 minutes

How would you make recognition work? What approaches do you think would be most appropriate in your setting or a setting with which you are familiar? How might you deal with the issues highlighted? Are there other issues which have not been mentioned? Make some notes and share them on your blog.

Provide your answer...

3 This week’s quiz

Check what you’ve learned this week by taking the end-of-week quiz.

Week 6 quiz. To view this content please access the complete course on OpenLearn

Open the quiz in a new window or tab then come back here when you’ve finished.

4 Summary

This week you have been introduced to some of the issues surrounding recognition of digital scholarship by institutions. You have also been offered some methods by which digital activities might be valued alongside traditional activities. We have offered some examples of institutions where digital scholarship is becoming embedded and the strategies adopted to make this practicable.

Next week you will look at some of the negative aspects of digital scholarship; some of the issues you should consider when adopting a digital approach.
Week 7: Introduction

You have looked at how digital scholarship is impacting upon the four types of scholarly activity, and how it can relate to professional recognition. While you have considered the issues involved, there has largely been a positive stance on digital scholarship. However, it is important to consider some of the negative aspects. These are not necessarily reasons not to adopt digital scholarship approaches, but you should be aware of such issues, both for yourselves, but also for any impacts on students.

Watch Martin Weller discuss this further:

Video content is not available in this format.

Week 7 introduction

By the end of this week you will have:

- gained an appreciation of the potential problems with digital scholarship
- considered the nature of online identity of the digital scholar.

1: The medals of our defeats

This week is based on Chapter 12, page 97 of *The Digital Scholar*. The extract starts on the following page.
1.1 Avoiding extremism

The use of technology seems to divide people into strong pro- and anti-camps or perhaps utopian and dystopian perspectives. Lessig (2007) points out that such an extremist divide is occurring with regard to intellectual property, on both sides, as the law intersects with the digital remix culture. On one side there are the copyright owners who will prosecute any misuse or, as with YouTube, enforce a takedown of any copyrighted material regardless of fair use. This is the type of response I categorised as a ‘scarcity response’ in Chapter 8 [Week 5 of this course]. But, as harmful, Lessig suggests, are the other extremists, who reject all notions of copyright and intellectual ownership. Similar extremism can be seen with the use of technology, in society in general and in education in particular. The pro-camp will make some of the more outlandish claims about the imminent revolution, the irrelevancy of higher education and the radically different net generation. The anti-technology camp will decry that it destroys social values, undermines proper scholarly practice, is always superficial and is even damaging our brains. Lessig seeks a balance between the intellectual property extremes, and a similar balance can be sought between the pro- and anti-technology camps. The remainder of this chapter will examine some of the anti-technology charges in more detail, some of which have more substance than others.

Figure 1 Larry Lessig

The use of technology seems to divide people into strong pro- and anti-camps or perhaps utopian and dystopian perspectives. Lessig (2007) points out that such an extremist divide is occurring with regard to intellectual property, on both sides, as the law intersects with the digital remix culture. On one side there are the copyright owners who will prosecute any misuse or, as with YouTube, enforce a takedown of any copyrighted material regardless of fair use. This is the type of response I categorised as a ‘scarcity response’ in Chapter 8 [Week 5 of this course]. But, as harmful, Lessig suggests, are the other extremists, who reject all notions of copyright and intellectual ownership. Similar extremism can be seen with the use of technology, in society in general and in education in particular. The pro-camp will make some of the more outlandish claims about the imminent revolution, the irrelevancy of higher education and the radically different net generation. The anti-technology camp will decry that it destroys social values, undermines proper scholarly practice, is always superficial and is even damaging our brains. Lessig seeks a balance between the intellectual property extremes, and a similar balance can be sought between the pro- and anti-technology camps. The remainder of this chapter will examine some of the anti-technology charges in more detail, some of which have more substance than others.
1.2 Superficiality

Figure 2 Is Google making us stupid?

Nicholas Carr's (2008) article 'Is Google Making Us Stupid?' struck a chord with many people. Carr's (2010) argument, which he fleshes out in his book *The Shallows*, is that our continual use of the net induces a superficiality to our behaviour. He says this is felt particularly when trying to read a complex piece:

Immersing myself in a book or a lengthy article used to be easy. My mind would get caught up in the narrative or the turns of the argument, and I'd spend hours strolling through long stretches of prose. That's rarely the case anymore. Now my concentration often starts to drift after two or three pages. I get fidgety, lose the thread, begin looking for something else to do.

Carr cites the British Library’s Google Generation study (Rowlands, 2008) as evidence that people are losing the ability to read deeply, and when they are online they tend to skim, jumping from one site to another. The pervasiveness of the Internet means that this behaviour is then carried over into other, offline activity.

The reason Carr's article resonated with people was that many have intuitively begun to suspect this of themselves. On a less significant level than deep reading, I know that, for instance, I cease trying to remember small pieces of information: people's telephone numbers being a good example. As a child it was a point of honour to be able to recite the numbers of most friends and family from memory. Now I'm lucky if I can remember my own number. This is partly a result of changing practice; one doesn't type the number in any more but dials from a contact list, and so the learning by rote that occurred previously
has diminished, but it is also a form of cognitive economy – I don't need to remember those numbers because I always have them in a list somewhere. Similarly, I don't need to remember an exact article or book reference because as long as I have enough salient pieces of information, Google will find it for me. I am effectively outsourcing some of that mundane memory to Google.

![Figure 3 Clay Shirky](image)

Figure 3 Clay Shirky

The real question is 'does this matter?' Is remembering small, precise pieces of information a kind of intellectual morning stretching routine? It isn't difficult and won't make you super-fit, but it has long-term benefits. Or are we just being practical, not wasting time remembering the rote information, which frees us up to engage in more creative pursuits? When Clay Shirky (2010) talks of cognitive surplus he is referring to it at a societal level, but maybe it operates at an individual level also; now that we don't have to waste mental capacity remembering what film a certain actor was in (because we have instant access to imdb.com) we are free to think how the narrative might have been better conveyed in that scene.

The answer is that we don't know which of these two is correct, and I suspect neither of them is, as they both suggest a rather simplistic mental model.

Carr's charge that superficiality bleeds over into other activities such as deep reading and analysis is a serious one for scholarship, which is almost entirely constituted of such activity. In this view engagement with technology is not just a distraction, or another pressure on an overloaded academic, but is positively dangerous. It becomes something akin to a virus, infecting the key critical engagement skills required for scholarship to function.
1.3 Quality

Figure 4 Is quality an issue?

Much of the success of Web 2.0 has been driven by its simplicity. This has seen a mass democratisation of expression, as anyone can now create a blog, or share a video or a photo. This has led to innovation and inventiveness which would not have arisen through conventional broadcast channels. However, it has also given rise to an unprecedented amount of what we might charitably label 'ephemera'. This shift in filtering from pre- to post-dissemination raises a key issue for scholars: How do they maintain and judge quality in a world where everyone is a broadcaster or publisher?

One response is to resist any such shift and to retain the peer-review model, which has served scholars very well. This is a viable approach, but even then, as PLoS (the Public Library of Science open access journal) have demonstrated, there are different models that may be explored.

The issue of quality is perhaps more keenly felt when we consider teaching. I raised the idea of pedagogy of abundance in Chapter 8 [Week 5 of this course], and in such a pedagogy the content will vary greatly in terms of quality. In The Cult of the Amateur, Andrew Keen (2007) argues that such abundance does not produce high-quality, merely an outpouring of low-quality, content: ‘instead of creating masterpieces, these millions and millions of exuberant monkeys – many with no more talent than our primate cousins – are creating an endless digital forest of mediocrity.’ If you compare any random piece of Web 2.0 content with that produced by a professional, this is likely to be true. But the question
is not whether some people produce poor quality content, obviously they do and the majority in fact, but whether as a whole this system can produce high-quality content. Keen argues that it does not, and it may be that we are making false comparisons. It is not whether a YouTube clip is as good as a professional television show or movie but rather whether it is a good YouTube clip that is important. These often trade off high production quality for inventiveness. A blog post may not be the equivalent of the inside story of investigative journalism, but because it is free from constraints of readership, word length or deadlines, the blog post may provide more thoughtful and detailed analysis of the subject than is found in the mainstream media.

From a scholarly perspective then, quality will depend on the purpose and there is an implicit message within different types of content. High-quality content, such as professionally produced teaching or research material, suggests authority. Students will have one set of behaviours associated with this, for example, reading, dissecting and summarising. Low-quality, individual items, however, because of their obvious ease of production, can be seen as an invitation to participate. Therefore if the intention is to encourage engagement then low-quality routes may be more fruitful than seeking to produce professional broadcast material. Around a research project then one might imagine a range of different types of output, all realising different functions.

Keen’s fear is that the cult of the amateur drives out the professional, that there is no room for newspapers if everyone reads blogs and that society will be the poorer. This is beyond the scope of this book, but in terms of education, the range of content can be beneficial, since ‘amateurs’ often create content which addresses subjects that academics may not and also in a manner which differs from traditional teaching.

For learners the issue becomes one of assessing the quality and appropriateness of resources. The role of education here seems vital, in both providing the critical framework for evaluating and assessing content and also in demonstrating how such content can be used to develop deep understanding of a topic.
1.4 Brain damage

Figure 5 The Internet is changing our brains...

Carr makes reference to the Internet changing our cognitive capacity, that it is rewiring our brains. In one sense, this is a facile truism; any time you learn anything your brain is ‘rewired’ at a synaptic level. If you remember anything from this book, it will have rewired your brain, but you probably won’t need to worry about it. There is a trend, however, to promote this rewiring to a grander scale, to suggest it is some kind of evolutionary change. Susan Greenfield is fond of making pronouncements of this nature, for example, that “these technologies are infantilising the brain into the state of small children who are attracted by buzzing noises and bright lights, who have a small attention span and who live for the moment” and even “we do not know whether the current increase in autism is due more to increased awareness and diagnosis of autism, or whether it can – if there is a true increase – be in any way linked to an increased prevalence among people of spending time in screen relationships” (Derbyshire, 2009).

These arguments seem both vague and ill-founded. The suggestion is that because the brain rewires itself (what is termed ‘brain plasticity’) it can therefore be influenced by the amount of time spent playing games, being online and so on (although the activities are rarely differentiated and often grouped together as ‘screen time’). This is as true of playing a computer game as it is of riding a bicycle or writing a book. It is the subsequent conclusion that it is necessarily harmful that lacks evidence and, as with the quotes above, is based on supposition and anecdote. Brain plasticity is also, surely, an antidote to these concerns, since if an individual’s brain has been rewired by one set of behaviour, it can be rewired again. The intention of referring to brain circuitry seems to be to instigate fear. As neuroscientist Joshua Greene puts it, ‘the Internet hasn’t changed the way we think anymore than the microwave oven has changed the way we digest food. The
Internet has provided us with unprecedented access to information, but it hasn't changed what we do with it once it's made it into our heads’ (Gerschenfeld, 2010).

Whether there are social and behavioural impacts of operating online is a serious question, however. Just as the television had serious social impacts, we must accept that computers and Internet will also have consequences.

These will undoubtedly be a mixture of positive and negative, but I would argue that using pseudo-scientific explanations to back up prejudices will not help us address these issues.
1.5 Forgetting and identity

Figure 6 Who are you?

One such serious issue relates to online identity, particularly for young people. There have been numerous stories about people losing their jobs because they have posted injudicious content online. Sometimes this seems justified, and at other times, an overreaction. For instance, most of us would sympathise with teacher Ashley Payne who
was dismissed from her job when she posted photographs of herself on her vacation holding a glass of wine to her private Facebook account and was reported to her principal. What such cases demonstrate is that the boundary between personal and professional life is increasingly blurred, and what may seem like a joke between friends has the potential to be taken out of context and, with a global distribution, suddenly transmitted everywhere. When 22-year-old student Connor Riley was offered an internship at Cisco, she tweeted ‘Cisco just offered me a job! Now I have to weigh the utility of a fatty paycheck against the daily commute to San Jose and hating the work’. A Cisco employee picked it up, and something of a witch-hunt ensued as the message was shared as an example of how to lose a job (she had in fact already declined the internship). A more recent, and sinister, case is that of Paul Chambers, who, because of airport closures, was unable to fly to see his girlfriend. He tweeted ‘Crap! Robin Hood airport is closed. You've got a week and a bit to get your sh*t together otherwise I'm blowing the airport sky high!!’ This message saw him prosecuted and fined using an obscure telephony law, which resulted in him losing his job twice.

Both of these cases demonstrate the strained boundary between public communication systems and social chat. For young people who now grow up using such media, the possibility of leaving a trace of some indiscretion increases due to the time they spend in such environments and because so much of their social life is conducted there. If it is not to have a damaging effect on their lives, they need to learn techniques of handling their online identities early on and, equally, society at large needs to learn to view these in the proper light.

In his book *Delete: The Virtue of Forgetting in the Digital Age* Mayer-Schonberger (2009) argues that forgetting is an important psychological process. It allows us to construct new versions of our identity, which are suited to different contexts and different ages. With a digital, networked and open online memory, however, this is becoming increasingly difficult. As well as leading to the types of problems of misinterpretation and heavy-handed responses listed above, it may also affect our own personal development. We cannot shake off the memory of the inconsiderate adolescent we once were so easily because its record is always there. He proposes that internet communications have a shelf life, that they should be allowed to expire unless the individual takes specific action to preserve them.

For educators there are two main issues; the first is the extent to which they help students manage their online identity, and the second is how they manage their own boundary between personal and professional life. There are a range of options available from complete withdrawal from online life to using pseudonyms to speak openly. Knowledge of the type of information that can be gathered about you and how that might be used is important, but if it comes at the cost of a sterile online exchange where people become scared to say anything beyond a form of corporate message, then that would be a price too high for many. So developing an appropriate online persona and voice is an important skill as our digital footprint expands. As is developing a good relationship with your employer one suspects.

It is not just young people who may have behaved foolish, who need to forget or at least remodel their past. Scholars make judgements, suggestions and proposals all the time. An open approach inevitably results in more such pronouncements, as scholarly output is not restricted to just conference papers and journal articles. An increase in both quantity and type of outputs (which may include casual conversations, jokes, half-thought-out ideas etc.) must increase the possibility of being wrong. Most scholars will revise their positions based on new evidence or changing circumstances. Scholarship is closely
bound with authority; the opinions of scholars count because they are deemed as being an authority in this area. Will a digital audit trail reveal contradictions, which undermine current authority?

I know that I have shifted position with regard to technology over the years. In 2004 I was an advocate of LMSs, but subsequently I have become a critic of the manner in which they stifle innovation. In 2008 I wrote a (not entirely serious) blog post suggesting that you ‘Google up your life’ (Weller, 2008). I am certainly more wary of some of the issues around cloud computing now and would be unlikely to write such a post today (although I still find the Google suite of tools superior to those offered in-house by my university).

Do such modifications to opinion undermine the authority of *The Digital Scholar*? Or are they part of a natural progression as someone develops an argument in response to changing contexts? If so, is this a subtlety that everyone can appreciate? Does the process of ongoing engagement and openness create a different type of authority?

I will leave you to determine your own responses to these questions, but I would suggest that perfect digital memory is not just an issue for teenagers with hangovers.

The extract from *The Digital Scholar* finishes here.

### 2: Examples of ‘openness’

In this talk Jonathan Worth provides a good overview of his conversion to an open, digital way of working. Jonathan is a professional photographer and educator, he uses social media to build upon the work conducted in his classroom. This video was produced as part of the project you looked at in Activity 1 of Week 4.

*Video content is not available in this format.*

Jonathan Worth describes personal examples of ‘openness’
Jonathan’s website has more information about how he uses openness in his teaching.
3: Difficulties with identity

Figure 7 Who are you online?

Bonnie Stewart is an academic who works online and actively researches issues related to equity, vulnerability and influence online. For a fuller description of her work visit her website.

In the following presentation she considers notions of academic identity on Twitter. Please note that there is no commentary.

Video content is not available in this format.

Academic Twitter
Alternatively you can read this article by Stewart (2015): ‘
In public: the shifting consequences of Twitter scholarship’.

Stewart raises issues we need to be aware of as we engage with digital scholarship. As digital scholarship becomes increasingly part of the mainstream, then there is a subsequent pressure for everyone to engage in it. If you are an early career researcher, for instance, then developing an online identity can be seen as an important part of establishing yourself within a field. Similarly, we encourage students to blog and use social media.

Possible issues we need to consider are:

- how much we force learners to reveal about themselves online
- how we conduct ourselves in online communications that are open to everyone
- whether we are exposing scholars to aggressive behaviour from others
- what support is available from institutions.

The reaction to these concerns can often be to disengage, but I would argue that would do a disservice to students and our community. However, we should be aware that creating an online identity comes with risks and be conscious of these.

Activity 1 Developing an online identity
Allow about 30 minutes

Imagine you have a colleague who wishes to develop their online identity, but is nervous about the potential downsides. Jot down three positives and three potential issues they should consider. Add some detail to each point including how they might emphasise the positives and ameliorate the possible issues.

Provide your answer...
4: This week’s quiz

Check what you’ve learned this week by taking the end-of-week quiz.
Week 7 quiz. To view this content please access the complete course on OpenLearn.
Open the quiz in a new window or tab then come back here when you’ve finished.

5: Summary

It would be naïve to suggest that everything in the digital garden is rosy and this week we have tried to highlight some areas which you might need to consider.
Next week you will look at how you might consider the impact of a move to digital scholarship. You will also be introduced to a methodology for assessing how well an institution might respond to the changes inherent in adopting new technologies.

Week 8: Introduction

You have considered different aspects of digital scholarship using the lens of Boyer’s framework. In this final week of the course you will look at a method for considering how you, or an institution, can frame the impact of digital scholarship changes. You will also look at how those changes can play out when implementing a digital approach to scholarship.
Watch Martin Weller discuss this:

Video content is not available in this format.
Week 8 introduction
This week does not include an extract from *The Digital Scholar* but you will be directed towards other resources to read.

By the end of this week you will have:

- gained an appreciation of the concept of resilience
- considered how digital resilience could be applied to your context.

1: Adopting a digital scholarship approach

Throughout *The Digital Scholar* Weller argues that higher education will need to make changes in order to adopt digital scholarship. This video discusses the changes made by the Graduate Center at City University, New York (CUNY) to incorporate a digital approach to PhD studentship.

If you are reading this course as an ebook, you can access this video here: [https://www.youtube.com/watch?v=E6zG1-qVlw](https://www.youtube.com/watch?v=E6zG1-qVlw)

Matthew Gold and Steve Brier use some vivid terms to describe their work at CUNY. It is ‘unrelentingly interdisciplinary’ and they are ‘rethinking’ and ‘enhancing scholarship’. They have brought about major changes in the way the Graduate Center works and those changes, driven by the adoption of digital technologies, span all postgraduate programmes offered by the university. The following section borrows the resilience metaphor from the field of ecology to offer a methodology for assessing an organisation’s ability to respond to digital challenges.
2: Digital resilience

The following extract is taken from an article by Martin Weller and Terry Anderson (2013) ‘Digital resilience in higher education’. You are not required to read the full article, but can do so if you think you would find it useful.

2.1 Resilience

The extract begins here.

In his 1973 paper on the stability of ecological systems, Holling defined resilience as ‘a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables.’ It is a perspective that has been applied beyond the ecosystems Holling applied it to, and has found particular relevance to sustainable development and climate change (e.g. Hopkins, 2009). Hall and Winn (2010) have applied the concept of resilience to education, and open education in particular, arguing that resilience ‘develops engagement, education, empowerment and encouragement. Resilient forms of HE should have the capacity to help students, staff and wider communities to develop these attributes. As technology offers reach, usability, accessibility and timely feedback, it is a key to developing a resilient higher education.’

Walker et al. (2004) propose four aspects of resilience:
1 Latitude: the maximum amount a system can be changed before losing its ability to recover.

2 Resistance: the ease or difficulty of changing the system; how ‘resistant’ it is to being changed.

3 Precariousness: how close the current state of the system is to a limit or ‘threshold’.

4 Panarchy: the influences of external forces at scales above and below. For example, external oppressive politics, invasions, market shifts, or global climate change can trigger local surprises and regime shifts.

Applying resilience to climate change, Hopkins (2009) suggests three factors that influence a community’s resilience:

- Diversity: not being dependent on one crop or livelihood
- Modularity: a degree of self-reliance and protection from outside events, such as local food supplies
- Tightness of feedbacks: making the consequences of actions apparent to everyday life

2.2 Disturbance and change

Figure 2 Change

Both of these models of resilience offer a useful means of considering the response of academia in general and individual institutions to the potential impact of new
technologies. Building on Holling’s work, resilience is now often defined as ‘the capacity of a system to absorb disturbance and reorganise while undergoing change, so as to retain essentially the same function, structure, identity and feedbacks’ (e.g. Hopkins, 2009). This definition places the emphasis on the capacity to retain function and identity, and this is particularly relevant to scholarship. If scholarship is viewed as a set of functions that are useful to society in general (taking Boyer’s four functions as an example), then the aim of digital resilience is to retain these core functions, but to allow them to be realised in new forms. This places a clear distinction between function and form. As Naughton (2009) stresses in terms of key factors about the impact of the internet:

Don’t confuse existing forms with the functions that they enable. It’s the functions that matter. Forms may be transient, the product of historical or technological circumstances.

... 

In terms of higher education practice then, resilience is about utilising technology to change practices where this is desirable, but to retain the underlying function and identity that the existing practices represent, if they are still deemed to be necessary. The practices themselves are not core to scholarship rather that they are the methods through which core functions are realised and these methods can and should change. The peer review process in academic publishing for example, is a method of ensuring quality, objectivity and reliability. But it may not be the only or the best way of realising this, or at least its current incarnation may be subject to change. A resilience perspective would seek to ensure these core functions were protected, and not just resist at the level of the method.

Although resilience can be seen at the individual level, it is perhaps best applied to the institutional level, which can be seen as a complex ecosystem in itself, comprised of a number of individuals, behaviours and tasks. The resilience approach will now be considered for two current digital challenges, at two separate universities.

In this approach Walker’s four aspects of resilience will be considered, and a score allocated against each aspect to provide an indicative measure of overall resilience. Each factor is given a subjective ranking of 1 to 10 (1 = low resilience, 10 = high resilience). A high score of more than 35 would indicate that it is probably not a particularly new challenge, (or that the institution was exceptionally well adapted already), and a low score of less the 15 would indicate that the institution faces a considerable threat from this challenge which it has not adapted to.

The extract ends here.
2.3 How ready are you?

In the article four aspects of resilience are highlighted, namely:

- latitude
- resistance
- precariousness
- panarchy.

Weller and Anderson suggest that by considering each of these aspects with respect to a particular digital change, an organisation, or an individual, can identify how prepared they are for the changes as well as what areas they need to address. The article gives examples for considering how The Open University is prepared for the impact of MOOCs, using the scoring system set out above.

You might use these criteria to assess your own readiness or that of an organisation with which you are familiar.
3: Reflection

Figure 4 Old school

You will have reflected on different aspects of your own practice throughout the course. You have considered Boyer’s framework, how digital scholarship can be recognised and the negative aspects of new approaches.

Activity 1 Reflecting on digital scholarship

Allow about 30 minutes

From your own perspective answer the following questions:

1. What part of digital scholarship has the biggest impact on your current practice?
2. What is the biggest benefit digital scholarship could potentially bring to your practice?
3. What is the biggest external obstruction to adopting digital scholarship?
4. What is your biggest concern regarding digital scholarship?

Make some notes and share them on your blog, if you wish.
4: This week’s quiz

Check what you’ve learned during the course by taking the end-of-course quiz. To view this content please access the complete course on OpenLearn. Open the quiz in a new window or tab then come back here when you’ve finished.

5: Summary

This week you have looked at some of the practical challenges you and/or your organisation may face when adopting a digital scholarship approach. The experiences of Gold and Brier at City University, New York offer one perspective on how an interdisciplinary graduate programme might look. You have also been introduced to a methodology for assessing the resilience of an organisation; its capacity to adapt and develop the attributes of digital scholarship while continuing to deliver the core functions for which it exists.

End-of-course conclusion

In this course you have used the book *The Digital Scholar* to examine aspects of change to scholarly practice; a change brought about by the advent of digital, networked and open technology. The impact on research, interdisciplinarity, public engagement and teaching has been considered. Issues relating to how such work is recognised have been addressed. You have also looked at some of the negative aspects of this push to online identity and discourse.

The course has used the Boyer framework as a means of examining the changes to scholarly practice. Boyer used the four categories of discovery, application, integration and teaching. For each of these categories we have only considered some possible interpretations (e.g. public engagement for application) but this can be realised in other ways also.

The Boyer framework provides us with a useful means of examining changes in existing practice. There is a downside, however, in using a framework that covers current and past scholarship; it may constrain our thinking or miss new elements that are not covered under this framework. Do you feel that the Boyer approach covered all aspects of digital scholarship, or were there some that felt like an awkward fit or missed altogether?

My feeling about this is that the categories are broad enough to include new approaches, but there may be a point that the practice is so different from the original intention that it might become meaningless. For now at least though, it provides a useful way of framing the transformation in many aspects of practice.

If you’ve gained your badge you’ll receive an email to notify you. You can view and manage your badges in My OpenLearn within 24 hours of completing all the criteria to gain a badge.
You can now return to the course progress page.

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