

A survey on the use of different forms of scholarly output

Final report

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June 2007

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Acknowledgements

The author wishes to thank Professor Charles Oppenheim and Dr Ann O'Brien, both of the Department of Information Science at Loughborough University, and also colleagues at LISU, for their help and advice throughout the project.

Glossary of terms

Blended learning	A combination of learning strategies and resources that creates a multifunctional instructional experience
Blog	Informally shortened from 'weblog', this is a web-based journal made up of personal experiences and subsequent reflections
Dataset	Any organised collection of data or information that usually has common theme; often the results of a survey
Discussion list	An e-mail forum, with or without a moderator, where people discuss topics to which the list is dedicated
E-zine	A magazine published online or via e-mail
Folksonomy	A user generated taxonomy used to categorize and retrieve web content such as Web pages, photographs and Web links, using open-ended labels called tags. Typically Internet-based, but may occur in other contexts
Podcast	A method of publishing files to the Internet, allowing users to subscribe to a feed and receive new files automatically by subscription, used largely for audio files
Social bookmarking/tagging	A method by which users store lists of internet resources which they find useful
Social software	Software that supports group interaction
Virtual world	A computer-based simulated environment inhabited by its users in the form of two or three-dimensional representations of humans. Virtual worlds appear similar to the real world in terms of their rules such as gravity, real-time actions and communication.
VLE (Virtual Learning Environment)	A system which support a range of learning contexts, from conventional, classroom implementation to off-line, distance learning and online learning
Wiki	A web application which allows users to add content, but also allows anyone to edit the content. Also refers to the collaborative software used to create such a website

Introduction

Given the proliferation of digital resources, it is no surprise that researchers and teachers are making use of the various different forms and formats that are readily available. While this is well known and accepted, there is little appreciation of how, when and in what contexts different forms of scholarly output are used. The JISC is seeking to explore these issues, and to that end commissioned LISU to carry out a study to discover needs for different forms of scholarly output, the nature and extent of its use, and any problems met by content creators or users.

Background

Since the first scholarly journals entered publication (almost 350 years ago according to Swan 2006 p.5), the printed word has been the primary, formal, means by which scholars have communicated the results of their work. In addition, print has also been the means by which scholars have “established their right to the intellectual property reported in their articles” (Swan 2006, p.5). Up to recent times, therefore, scholarly output has mainly taken the form of some sort of printed publication, and has been universally adopted by scholars from all subjects.

It is clear, however, that this situation has changed, and is now becoming rather unpredictable. The advent of microchip technology has led to the development of an ever-expanding variety of new electronic technologies, and these are increasingly being used to present scholarly output. The development of these new technologies has led to the ready availability of a proliferation of digital resources. As a group often in the vanguard of the adoption of such novel technology, it is no surprise that researchers and teachers within Higher Education are making use of the various different forms and formats of scholarly output which are therefore open to them. While this is well known and accepted, there is little appreciation or evidence of how, when and in what contexts different forms of scholarly output are used.

As a result, a study was instigated by the JISC which aimed to discover the needs for different forms of scholarly output, the nature and extent of its use, and any problems met by content creators or users. A literature review was carried out to investigate the extent of the existing knowledge in this area, in order to inform and give background to a broad based survey of academic staff.

The literature review showed that methods of using the more traditional kinds of scholarly output are well understood. That is, there is widespread use of printed books (including textbooks, research monographs, conference proceedings and so on), printed journal articles and, to a lesser extent, other printed material such as professional journals, newspapers and magazines. This may, at least in part, be due to the emphasis placed on such output by the Research Assessment Exercise (RAE) which has been determining research funding in Higher Education Institutions in the UK since 1986. As this is widely accepted, (see, for example, Swan 2006) it will not be discussed further here.

In the past decade, electronic versions of journals available in print and new titles only available electronically have also been more widely used and recognised as an important part of scholarly communication. It is less clear, however, to what extent the very new forms of

electronic communication are being used by the Higher Education community. The literature review has shown that, since these are so novel, there is a lack of literature on the subject.

As already noted, subjective experience suggests that academics are currently making use of many types of output (both scholarly and 'non scholarly'); indeed, this was a conclusion of the research carried out by Armstrong and Norton (2006). This is not surprising, as recent developments in digital resources have meant that these exist in all kinds and in many environments, being created by many different kinds of developer. It is clear that information and communication technologies (ICTs) can enable new forms of teaching and learning to take place (see, for example, Kirkwood and Price 2007). The expectations of information users in colleges and universities are changing; there is clearly an increasing reliance on electronic resources and on the Internet by information users in colleges and universities (see, for example, Marcum and George 2003 and Wakeham and Garfield 2005).

Furthermore, it is likely that extensive use of multi-format resources is becoming the norm across many subject areas. For example, Wakeham and Garfield (2005) carried out a study investigating (amongst other issues) whether researcher/teachers encourage their students to make use of the resources they use themselves. Semi-structured interviews of 21 academics at Anglia Polytechnic University found that they were making significant use of the library website, online databases and journals and recommending these resources to their students. This is a situation likely to be replicated elsewhere. However, it is clear (and most likely not very surprising) that the choice of materials used is relatively discipline specific (Armstrong and Norton 2006). An example of this can be seen in a study of the use and users of digital resources in undergraduate education specifically in the Humanities and Social Sciences in California, USA (Harley et al 2006). Investigating how and whether the available digital resources are being used in undergraduate teaching environments, the researchers concluded that understanding the use and users of digital resources might benefit their integration into teaching.

Blended learning

Indeed, there is increasing evidence of the existence of a new concept entitled 'blended learning'. Also known as "hybrid learning, flexible learning, and web-enhanced instruction" (Codone 2004, p.191), the concept of blended learning has become widely accepted over the past five years (Allen 2007). It is typically indicated "by a combination of learning strategies and resources that creates a multifunctional instructional experience" (Condone 2004, pp.191-2), which means that the potential of new technology can be both exploited and interpreted by academic staff. In this way, electronic technologies can supplement the more traditional teaching methods.

In a review of UK literature and practice relating to the undergraduate experience of blended e-learning, Sharpe et al (2006) identify three ways in which the term 'blended learning' is currently being used. The most common use related to the provision of supplementary resources for courses being conducted along mainly "traditional lines" and delivered via institutionally supported virtual learning environments (VLEs). The second most common type of blended learning is concerned with examples of the "... use of technology to facilitate interaction and communication", which replace other methods of teaching and learning (p.2). Lastly, there is evidence that students themselves demonstrate original approaches to learning, making use of the new technology in a way which seems to bypass many university facilities.

This is seen in the use of such tools as mobile phones, MSN, weblogs and wikis to enable them to work collaboratively and supportively in an independent manner.

Blended learning (also referred to as blended e-learning) is clearly an important aspect in the use of a varied range of different forms of scholarly output in both teaching and learning. It was clear from the research that student response was “overwhelmingly positive to the provision of online course information to supplement traditional teaching” (Sharpe et al 2006, p.3). This is therefore a way of learning which might be acceptable to, and advantageous for, both academics and their students.

Social software

A key advance has been the development of ‘social software’. The term was first coined in 2002 and is defined simply as “software that supports group interaction” (Shirky 2003, quoted in Owen et al 2006). Such software can bring some of the elements of sociability together with those of computing, meaning that it supports conversational interaction between individuals and groups and allows social feedback in which a group can rate the contributions of others. Social software can also offer support for social networks which create and manage a digital expression of personal relationships and help in the building of new relationships. In their paper focusing on the potential for the development of new approaches to education, Owen et al (2006) highlight some of the key attributes of social software in relation to education. These include the fact that it delivers communication between groups, enables communication between many people, provides gathering and sharing resources, delivers collaborative collecting and indexing of information, allows syndication and assists personalisation of priorities, has new tools for knowledge aggregation and creation of new knowledge and delivers to many platforms as is appropriate to the creator, recipient and context (Owen et al 2006). Its value to the Higher Education community is therefore clear in terms of both research and teaching.

As might be anticipated, there is a wide range of software which might be described as belonging to the social software group. It can be argued that this includes such applications as internet discussion forums, social networking, dating sites, group e-mails and multiplayer online games and internet messaging. Those applications falling more definitely within the interest of the education sector take in some of the more recent innovations such as weblogs, wikis and social bookmarking (Owen et al 2006).

Web 2.0

‘Web 2.0’ is another term allied to social software. Web 2.0 is a term originally coined by Dale Dougherty in 2004 (O’Reilly 2005). On a simpler level, Web 2.0 can be defined in reference to a group of technologies which have become associated with the term: blogs, wikis, multimedia sharing services, content syndication, podcasts and content tagging services (Anderson 2007). In attempting to address the Web 2.0 issues facing Higher Education, Anderson (2007, p.32) notes the current lack of “reliable, original pedagogic research and evaluation evidence” relating to the advantages and disadvantages of integrating social software in mainstream education.

Anderson’s report does, however, cite some examples of preliminary activity in learning and teaching and scholarly research. Teaching and learning initiatives include wikis being used at the University of Arizona to help distance learning students on an information studies course

(Glogoff 2006), at the State University of New York for a collaborative writing project (<http://www.geneseo.edu/~schacht/>) and at Oxford University to support teachers (Phoebe Pedagogic Planner 2007). A further example is quoted by Placing et al (2005); students at Deakin University (Australia) were able to use a wiki to make known their dissatisfaction with a module which must be taken entirely online (p.163). The increasing importance of wikis can perhaps be seen in the fact that the source of the chapter by Glogoff (2006) is taken from a book on using wiki in education, which is available, perhaps inevitably, as a wiki (Mader 2007).

The example of blogging discussed by Anderson (2007) is that of the University of Warwick providing easy to use facilities for staff and students to create their own personal pages (University of Warwick 2007). In aiming to explore the various forms of direct publishing and content aggregation tools currently available to educators and the range of educational activities to which they are being applied, Placing et al (2005) searched for examples of how blogs are being used. The term 'blog' is a term informally shortened from 'weblog' and is "essentially a web-based journal – usually the product of a single author – being made up of personal experiences and subsequent reflections" (Placing et al 2005, p.159). Blogs often include hyperlinks to other web-based sources and images and multiple authorship is not unusual. These features mean that a blog can offer "a useful space for course planning or the sharing of resources and communication throughout a research project" (Placing et al 2005, p.159). It is therefore clear that blogs can be valuable in education, both as a means by which to communicate the results of scholarly work, and as an aid to teaching.

Social bookmarking is a method by which users store lists of internet resources which they find useful; existing examples are too numerous to mention, but a currently popular example is del.icio.us (<http://del.icio.us/>). Other innovative examples are discussed by Alexander (2006) – these include Shadows (<http://www.shadows.com>) and RawSugar (<http://www.rawsugar.com/>). The pedagogical role which can be played by social bookmarking in Higher Education lies in its ability to facilitate collaborative information discovery. For example, multi-authored social bookmarking pages can be valuable in team projects, and following a bookmark site could allow an instructor to track a student's progress. Similarly, students can learn from their teacher's findings (see Alexander 2006 for further details).

Social bookmarking is also an innovation which is having an effect on research. A good example of such a service and used mainly by researchers is Citeulike – "a fusion of Web-based social bookmarking services and traditional bibliographic management tools" (Emamy and Cameron 2007). Citeulike has been further described as a "Web-based tool to help scientists, researchers and academics store, organise, share and discover links to academic research papers" (Emamy and Cameron 2007). The value of such software for researchers is clear; this is reinforced by it currently having 33,000 registered users and an international audience, having been translated into eight different languages.

Virtual worlds are also relevant to this research; probably the best-known example of these is Second Life. A virtual world entirely built and owned by its residents, Second Life has been in existence since 2003 and is extremely popular having almost eight million users from around the globe (Second Life 2007). As suggested by a report commissioned by the JISC e-Learning programme (de Freitas 2006), virtual worlds such as Second Life can be of great value in education. Indeed, this has been the case since the development of the earliest games (p. 5) and the report notes that the "broadening use of leisure games and simulations has produced an increased interest in how 'immersive learning' can be used to support educational practices"

(de Freitas 2006, p. 5). This report presents the findings of an extensive literature review of the educational use of virtual worlds, and a series of case studies of game-based learning, including examples from various HE institutions such as the University of Glamorgan and the Glasgow Graduate School of Law.

An important issue is that of Virtual Learning Environments (VLEs) which are likely to reflect the workings of the organisation in which they are situated (Anderson 2007). Many Higher Education institutions already have VLEs, and this was explored in the survey. However, Anderson discusses the idea that there are questions over the compatibility of VLEs with the technologies included within the Web 2.0 world. In this context, VLEs are considered to be insufficiently tailored to the individual, and attempts have been made to remedy this situation mainly in the form of Personal Learning Environments (PLEs) (see, for example, Bolton University 2007).

There are clearly other new technologies which may be of interest to HE researchers. These may be attractive to the research environment, particularly in terms of their ease of use, support for collaboration and the non-linear nature of much of the technology (Anderson 2007). Four specific technology areas have been adopted and developed by the research community. These are: folksonomies (example – CombeChem (Southampton University 2005)); blogging; social tagging and bookmarking (discussed above); and scientific data mash-ups. However, the suitability of the folksonomy within formal knowledge management environments is the subject of much debate; this is perhaps a form which requires further development.

Blogging has been discussed above in terms of learning and teaching; there is, however, evidence to suggest that it enables researchers in all disciplines to engage in peer debate, share early results or seek help with experimental issues (Skipper 2006). Conversely, having carried out an ultimately unsatisfactory search for examples of such blogs, Placing et al (2005) suggest that few instances exist. This controversial issue requires further investigation. It is more clear, however, that there has been a movement towards collective blogs. A good example of such a blog is RealClimate (<http://www.realclimate.org/>), the “work of a number of scientists working in the area of climate and climate change” (Placing et al 2005, pp.161-2) and a serious attempt at ensuring up-to-date information is available.

Other resources which are relevant here include arXiv.org (the electronic archive relating to theoretical physics), institutional repositories, pre and post-print archives and non-print outputs such as audiovisual materials including film and television excerpts and those relating to performance and similar arts.

It is clear, therefore, that the use of social software (or Web 2.0) is becoming more widely recognised and understood within the HE community. Evidence of its use is scarce, and the survey described below will attempt to fill this gap in knowledge.

Survey methodology

The survey instrument for the research was an online questionnaire. The timescale of the project did not allow for piloting of the questionnaire; the management team therefore consulted amongst colleagues and with the designated representative of the JISC SCG before finalising the questions. Once confirmed, the questionnaire was made available in a web-based form and mounted on the LISU web server (*see Appendix for a copy*). Replies were received directly by LISU; this allowed for the prompt monitoring of response rates and for the necessary reminders and further invitations to participate.

As stipulated in the original tender for this research, a two-stage cluster sampling strategy was employed. Firstly, a random sample of 20 institutions was selected from the HESA list of HE institutions. Within each institution, up to five departments were identified (once again at random), from different faculties/schools. A balance between institution types and subject disciplines was ensured.

The head of each selected department was contacted in order to inform them that they would soon be contacted again and asked to distribute details of the questionnaire to all members of academic staff within their department. A few days later, a second e-mail message was sent with a request to distribute the questionnaire link – the message was designed so that it could be simply forwarded to the relevant contacts. It was hoped that this would provide a representative mix of academic staff involved primarily in both teaching and in research. An incentive prize was offered to respondents in order to maximise response rates; the prize took the form of six Amazon vouchers of £50 each.

Towards the end of the survey period, departments were contacted and asked to circulate the details of the study again, to further encourage response. In addition, since the response rate was well below the level required, it was decided to extend the invitation to participate to a further 20 institutions. The institutions were again selected at random; within each, a random sample of up to five departments was identified and the head of each was contacted in the same way as before. The survey period was extended by one week in order to allow the new respondents some time in which to complete the questionnaire.

Despite these actions, however, the response rate remained below that which was required. Consequently, and with the agreement of the JISC SCG, a final third random sample of 20 institutions was identified and a selection of departments was singled out; the heads of these were contacted in the same way as previously. The survey deadline was extended for the final time – to 25th May 2007.

The measures described above resulted in a final total of 304 useable replies. Further details relating to the respondents can be found in Tables 1 to 5 below. As can be seen from Table 1, the highest number of responses came from the University of Reading, closely followed by Glasgow Caledonian and the University of Salford. Disappointingly, there were 20 institutions from which fewer than five responses were received. In addition, Bishop Grosseteste University College, City University, Coventry University, St Mary's University College and the University of Dundee managed only response each. Of the 60 institutions contacted, 14 did not reply at all.

Table 1: Responses by institution

Institution	No. of responses	%	Institution	No. of responses	%
Pre-1992 Universities			Post-1992 Universities (cont)		
University of Reading	17	5.6	Staffordshire University	13	4.3
University of Salford	16	5.3	University of Derby	7	2.3
Imperial College London	14	4.6	University of Teesside	7	2.3
Cardiff University	11	3.6	University of Wolverhampton	7	2.3
Heriot Watt University	10	3.3	University of Hertfordshire	6	2.0
Loughborough University	10	3.3	Queen Margaret University	5	1.6
London School of Economics	9	3.0	Liverpool Hope University	4	1.3
The Open University	9	3.0	University of Westminster	4	1.3
University of Exeter	8	2.6	Canterbury Christ Church University	3	1.0
University of Surrey	8	2.6	York St John University	3	1.0
University of York	8	2.6	Bournemouth University	2	0.7
University of Essex	6	2.0	Coventry University	1	0.3
University of Ulster	5	1.6		122	40.1
University of Manchester	4	1.3	HE Colleges		
Institute of Education	3	1.0	College of St Mark and St John	8	2.6
Royal Holloway, University of London	3	1.0	Newman College of Higher Education	5	1.6
University of Bristol	2	0.7	St Martin's College Lancaster	5	1.6
University of Southampton	2	0.7	Ravensbourne College of Design	4	1.3
University of Buckingham	2	0.7	University of Wales Institute, Cardiff	4	1.3
City University	1	0.3	Royal Academy of Music	3	1.0
University of Dundee	1	0.3	Royal College of Music	2	0.7
	149	49.0	Bishop Grosseteste University College	1	0.3
Post-1992 Universities			St Mary's University College	1	0.3
Glasgow Caledonian University	16	5.3		33	10.9
University of Plymouth	15	4.9	TOTAL	304	100.0
University of the West of England	15	4.9			
Liverpool John Moores University	14	4.6			

Table 2: Responses by subject discipline

Subject discipline	No. of responses	%	Subject discipline	No. of responses	%
Arts and Humanities			Social Sciences (cont)		
Humanities & Language based studies	24	7.9	Psychology & Behavioural Sciences	14	4.6
Education	21	6.9	Sports Science and Leisure Studies	11	3.6
Design & Creative Arts	14	4.6	Social Studies	7	2.3
Architecture, Built Environment & Planning	9	3.0	Law	5	1.6
Modern Languages	6	2.0	Economics & Politics	3	1.0
Geography	4	1.3		73	24.0
History & Archaeology	2	0.7	Science and Engineering		
	80	26.4	Engineering	19	6.3
Medical and related			Mathematics	19	6.3
Health & Community Studies	20	6.6	Biosciences	14	4.6
Medicine & Allied Sciences	20	6.6	Information Technology /Computing	14	4.6
	40	13.2	Natural Sciences	14	4.6
Social Sciences (including Business)			Earth, Marine and Environmental Sciences	8	2.6
Business and Management Studies	19	6.3	Agriculture & Forestry	4	1.3
Media Studies	14	4.6		92	30.2
			Other	19	6.3
			TOTAL	304	100.0

Table 2 shows the subject disciplines in which respondents reported they worked. The list was compiled from that utilised by the Higher Education Statistics Agency (HESA) in its regular publications. However, in order to keep the list as short as possible, some of the HESA categories were combined where this was suitable. As can be seen from the Table, the highest proportion of respondents were involved in 'Humanities and Language based studies', followed by 'Education'. Nineteen respondents could not identify their subject from the categories provided and selected "Other". Compared to the distribution of academic professionals overall in 2005-06, medical and related subjects are significantly under-represented in the eventual sample, and arts & humanities and social science are over-represented. Medical schools were included in the sampling process at all stages, suggesting either that their heads of department were more reluctant to pass on our invitation to participate, or that individual staff were less likely to respond to the invitation.

Table 3 details respondents by age group; it shows that the largest proportion of participants were aged 46-55 years (26.3%), followed by 56-65 years (24.7%). Only seven respondents chose not to supply their age. There were few responses from those aged 26-35 years; it is not immediately apparent why this might be the case. Those aged over 55 years were significantly over-represented in the sample compared to the overall age distribution of academic professionals in 2005/06 (40% of the sample compared to 19% of the population). One reason may be that retired staff can remain associated with their department, and so would have received the invitation to participate in the survey, but are no longer considered as employees for the HESA (2007) return.

Table 3: Responses by age group

Age group	No. of responses	%
18-25 years	35	11.5
26-35 years	5	1.6
36-45 years	58	19.1
46-55 years	80	26.3
56-65 years	75	24.7
65+ years	44	14.5
No response	7	2.3
Total	304	100.0

Table 4 provides details of the gender of the survey respondents, and shows that there was a higher proportion of male participants (57%). Only 3% of respondents did not provide details of their gender. This is in line with the distribution of academic professionals overall in 2005-06 (HESA 2006).

Table 4: Responses by gender

Gender	No. of responses	%
Male	172	56.6
Female	122	40.1
No response	10	3.3
Total	304	100.0

Respondents were asked to provide approximate percentages of time spent on teaching, research and administration. These details were requested in order to give some idea of the proportion of participants spending most of their time on research, teaching or other administration duties. For the purposes of reporting the results, the responses have been sorted into bands of 10% and are summarised in Table 5. The replies about the percentage of time spent are also summarised in Figs 1 to 3 below. As can be seen from Table 5, none of the survey respondents claimed to be spending 100% of their time teaching, and 8.6% noted that none of their time was spent on teaching. However, there was a relatively wide range of answers, including the very precise 22.7%; the median value was 40%. The mode (the most frequent value) was also 40%.

With regard to time spent on research, Table 5 shows that 6.9% of respondents spend no time carrying out research, and 3.3% spend 100% of their time on this activity. In common with teaching, there was a broad range of answers to the question. The median value here was 25% of time spent on research; the mode was 10% of time.

In relation to time spent on administration and other activities, Table 5 shows that only 3.9% of the respondents spent no time on administration and just 1% spent between 81% and 90% or 100% of their time on this activity. The median value was 25% of time spent on administration; the mode was 20% of time.

Table 5: Approximate percentage of time spent on teaching, research and administration/other

Approximate time	Teaching (%)	Research (%)	Admin/other (%)
No response	0.7	0.7	0.7
0%	8.6	6.9	3.9
1% – 10%	10.2	21.1	13.5
11% – 20%	7.9	16.8	25.0
21% – 30%	14.8	16.1	18.1
31% – 40%	18.8	14.8	16.4
41% – 50%	15.8	9.5	9.9
51% – 60%	10.2	2.6	4.3
61% – 70%	5.9	2.3	3.9
71% – 80%	3.9	3.3	2.3
81% – 90%	3.3	2.0	1.0
91% – 99%	-	0.7	-
100%	-	3.3	1.0
Total	100.0	100.0	100.0

Fig 1: Approximate percentage of time spent on teaching

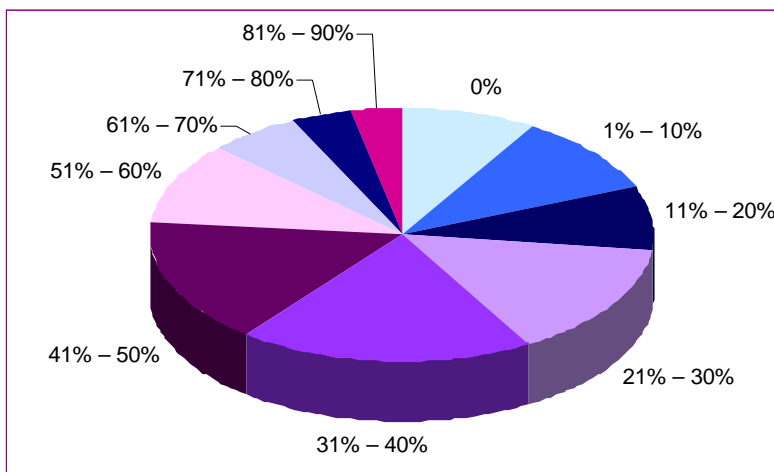


Fig 2: Approximate percentage of time spent on research

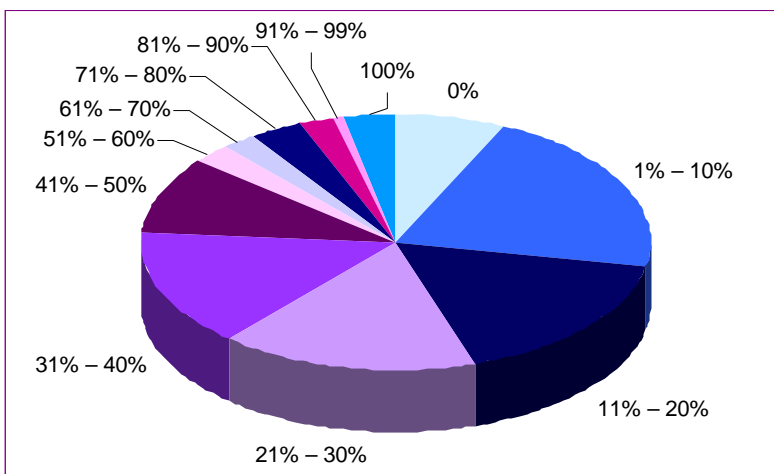
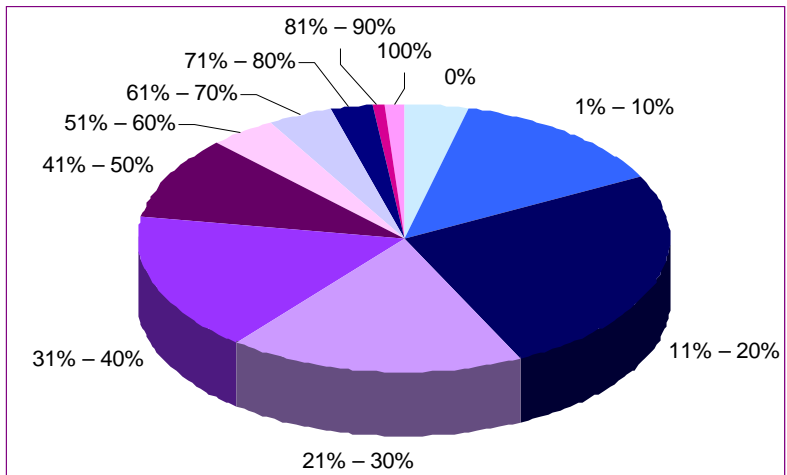


Fig 3: Approximate percentage of time spent on administration/other



Analysis

Analysis of the replies to the survey follows. Where appropriate, each question has been analysed by subject domain; formal statistical comparisons have been made between subject groups (see Table 2 above), using the χ^2 test. Analysis by institution type has also been carried out using the χ^2 test – these have been grouped according to Table 1: pre-1992 universities, post-1992 universities and Higher Education Colleges. In each case, any statistically significant differences at the 5% or 1% level have been noted. There were insufficient numbers of staff involved in research only or teaching only to allow formal testing on this basis.

Teaching

Reading lists

When asked whether they provide reading lists to their students, an unsurprising 85.9% of the respondents indicated that they do. Only 3.6% did not provide reading lists (the remaining 10.5% did not reply). Participants were then asked to provide details of how such lists are provided to students. Table 6 shows that the majority of those who replied provide reading lists 'in handouts' (65.8%), followed by 'as a bibliography' (52.3%). Those teaching and/or researching in the Arts and Humanities were significantly more likely to use a bibliography; those in Science and Engineering were significantly less likely to do so ($p < 0.01$). A relatively high proportion noted using links in a website (45.1%) and a wide range of other methods of provision were listed, and are described below.

There were 22 participants who noted using their institution's Virtual Learning Environment (VLE), some detailing which one (specifically Blackboard, WebCT and Moodle). This included sections of the VLE which were dedicated to particular modules. Reading lists are made available in module handbooks, descriptors and specifications or student handbooks by 21 respondents. This may be in hard copy and/or electronic copy. Five noted the use of a website, but not as links; three make PowerPoint slides available at the end of lectures. There were two respondents who give details of reading lists verbally during individual tutorials or group discussions. Another two participants use e-mail, one noting this is usually in response to individual requests. The remaining methods detailed were: "social software"; "books of my own that I lend, and face-to-face discussion"; "often I prefer to list materials that are available electronically through our library" and "stated in lecture (chalk on blackboard)".

Table 6: Ways in which reading lists are provided to students

	<i>No of responses</i>	<i>%</i>
In handouts	200	65.8
As a bibliography	159	52.3
In a website as links	137	45.1
Other	40	13.2

Course packs and other teaching materials

Respondents were then asked whether they provide course packs or other teaching and learning materials to their students. The majority of participants do provide such materials (79.9% of all respondents). Just 10.2% replied negatively to this question.

Those providing course packs or other teaching and learning materials to students were asked to give details of how these were provided. Printed handouts were the medium used by the majority of participants (65.8%), but website materials were utilised by 58.2%. Those working in the Arts and Humanities were significantly more likely to provide printed handouts than those working in other subject domains; those in Science and Engineering were significantly less likely to provide these ($p < 0.01$).

Other methods were the institution's VLE (26 responses), module booklets (5), material provided online (3), on CD-ROM/DVD (3), web links to relevant materials (2), social software (1), e-mail (1) and intranet (1). Other comments were that materials were provided "visually via computer, projector and/or whiteboard", and that "PowerPoints and lecture notes are downloadable. We also record technical sessions for students to download and watch and learn in our absence, PDF format files of printed course materials previously on CD-ROM, now on website – searchable format for revision purposes and on our intranet electronically as links".

Scholarly output used in teaching

As part of the study, it was important to investigate the use of different forms of scholarly output for teaching. The respondents were presented with a list, and the replies received are shown in Table 7 below; percentages are expressed in terms of those who replied to the question rather than the total number of participants. It is perhaps not surprising that the majority of participants indicated using print textbooks (81.5%) in their teaching; slightly fewer specified the use of articles in refereed print (74.7%) and electronic (73.6%) journals. The statistical tests found various significant differences in the responses related to this question. With regard to subject discipline, these are as follows:

- Those teaching in the Arts and Humanities were significantly more likely ($p < 0.01$) to use articles in refereed print journals in their teaching
- Those in Medical and related subjects were significantly more likely, and those in Science and Engineering were significantly less likely ($p < 0.05$) to make use of articles in refereed electronic journals
- Professional journals (print) were significantly more likely to be used by those teaching in Arts and Humanities and in Medical and related subjects ($p < 0.01$)
- Professional journals (print) were significantly less likely to be used by those teaching in Science and Engineering ($p < 0.01$)
- Articles in electronic professional journals were significantly less likely to be used by those teaching in Science and Engineering ($p < 0.01$)

Around two thirds of respondents also indicated that they use chapters in printed books for their teaching; this was significantly more likely amongst the Arts and Humanities respondents ($p < 0.01$) and significantly less likely amongst those in Science and Engineering. The situation was exactly the same in the case of chapters in electronic books ($p < 0.01$). It is clear from the table that relatively few participants make use of the more novel technologies such as e-zines (10.2%), wikis (9.4%) and blogs (7.2%). Slightly more popular, however, are subject repositories (18.1%) and discussion lists (17.0%).

With regard to institution type, the statistical tests showed that those in post-1992 universities were significantly more likely to use articles in printed professional journal articles and in

electronic professional journals ($p < 0.01$ in each case). They were also significantly less likely to use research monographs ($p < 0.01$) and to make use of material from subject repositories ($p < 0.05$). Conversely, those from pre-1992 institutions were significantly less likely to use articles in professional electronic journals ($p < 0.01$) and significantly more likely to use chapters in electronic books ($p < 0.05$).

Table 7: Formats included as part of teaching

Format	No of responses	%
Textbooks (print)	216	81.5
Articles in refereed journals (print)	198	74.7
Articles in refereed journals (electronic)	195	73.6
Chapters in books (print)	184	69.4
Articles in professional journals (electronic)	124	46.8
Articles in professional journals (print)	124	46.8
Conference papers	103	38.9
Material on your institutional website	101	38.1
Multimedia/audiovisual materials including film and television excerpts	100	37.7
Textbooks (electronic)	85	32.1
Chapters in books (electronic)	84	31.7
Research monographs (print)	78	29.4
Newspapers (print)	71	26.8
Newspapers (electronic)	63	23.8
Magazines (print)	57	21.5
Material from institutional repositories	55	20.8
Research monographs (electronic)	51	19.2
Material from subject repositories	48	18.1
Discussion lists	45	17.0
Material on your personal website	43	16.2
E-zines	27	10.2
Wikis	25	9.4
Other social software supporting group interaction	20	7.5
Blogs	19	7.2
Conference posters	13	4.9
Other	19	7.2
Total respondents	265	

Other social software supporting group interaction noted was Blackboard (6), group forums (3 responses), chat in WebCT (2), E-mail (2), Moodle (2), del.icio.us (2), RSS (2), YouTube (2) and MySpace (2). With just one mention each were VLE discussion forum and postings, flickr, FirstClass conference, Page Flakes, Blogger.com, facebook, Google Earth, sakai, podcasts, on-line forums (in-house), and commercial information brokers. One respondent had started using the discussion option on WebCT (a web based email forum) but students had been reluctant to use it; another noted using arxiv.org (an e-print service in the fields of physics, mathematics, non-linear science, computer science, and quantitative biology owned, operated

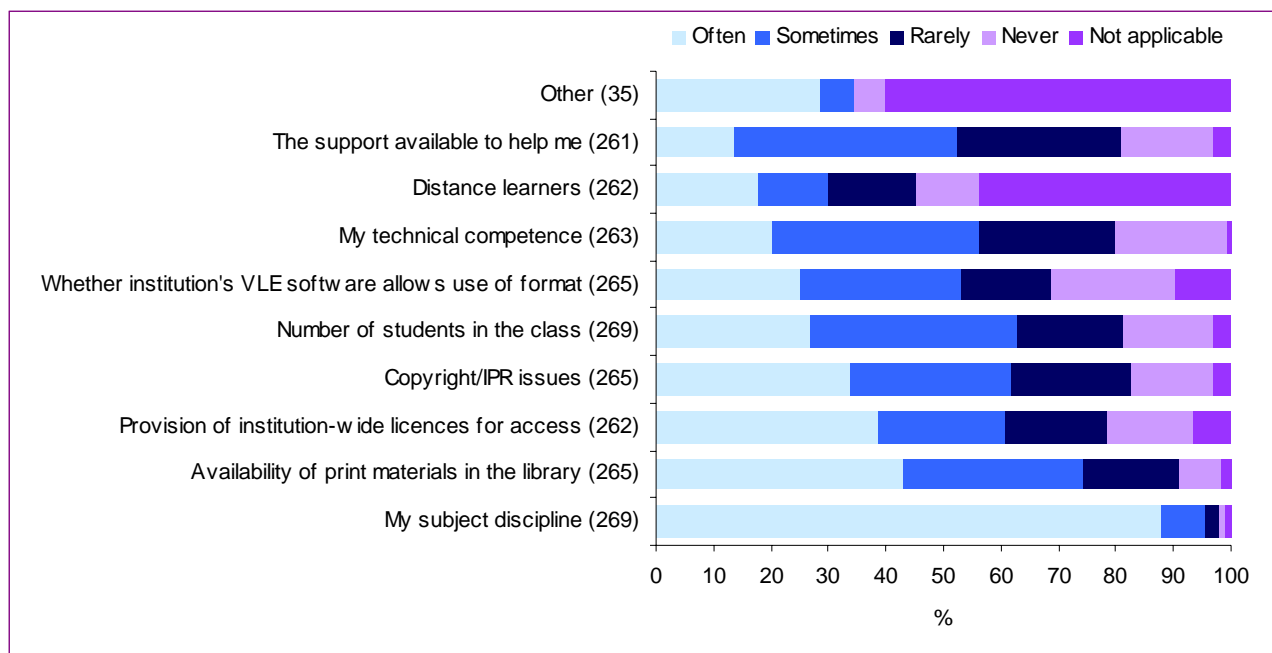
and funded by Cornell University). There was one participant who noted that they study this subject and so regularly use them all, but lately had been using Second Life; another did not supply details of Wikis to students, but suggested that they are located anyway. The less predictable answers were “original compositions and case studies” and “the use of lecture notes (chalk on blackboard)”; it could be argued that these are not types of social software.

Other formats which participants reported using as part of their teaching included PowerPoint slides, lecture notes, videos and DVDs, compact discs, music scores, image databases, websites, material from news websites, electronic workbooks and tutorials, video recordings of respondent’s own lectures, video observation (e.g. Dartfish), technical indexes (on-line resource), industry relevant website (Mediatel), models, simulation equipment, professional body websites, discussion forums, Government documents, language learning web sites (Escola virtual, Scola etc), class generated materials shared electronically, on-line e-book of digitised materials, and podcast (audio).

Influences on the choice of teaching materials

In order to find out about the influences on choice of content when providing materials for students, respondents were presented with a list of suggestions and asked to rate how often they influenced their choice. The responses are summarised in Fig 4 below; this presents a mixed picture. As can be seen, subject discipline is the influence which is most often cited as having an effect on the choice of teaching material content – an overwhelming 77.6% of respondents chose ‘often’ in response to this. In addition, a total 64.8% of respondents thought that the availability of print materials in the library is at least sometimes an issue when providing materials for students. Encouragingly, only 17.4% and 11.5% respectively found their technical competence and the support available an influence when providing teaching materials. It was clear that relatively few of the participants were involved with distance learners – 37.8% thought the question was not applicable.

Fig 4: Influences on the choice of content when providing teaching materials

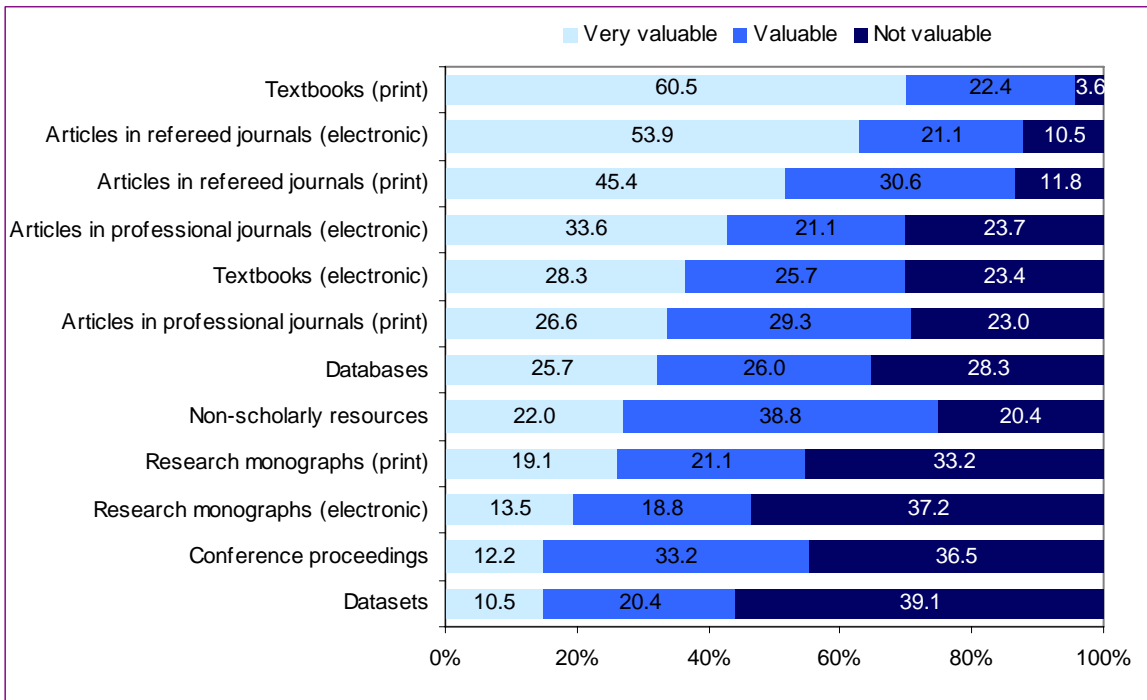


Other influences cited by respondents were as follows:

- Time available for preparation (2 responses)
- Students' ability and resources in accessing IT media
- Easy to use for students; does not generate problems to students (to avoid technical queries to me)
- The type of students and the potential benefits
- The likelihood that students will actually use the resource in a given form compared to the time for me to prepare it is important
- Needs of students, pedagogical value
- Whether it is relevant to themes we are covering, and whether I think students will have time to make use of the content
- Academic level of course i.e. under/post graduate
- The relevance of the material for my subject group (academic level)
- How it fits into the wider picture of the programme being taught. e.g. if previous module is text influenced then next module may be moving image resourced
- The institution's emphasis on moving to electronic formats
- Obviously enough, the quality of the scholarship in the material!!
- Availability of material - much audio-visual (i.e. television programmes) relevant to my teaching is simply not available as a video/DVD and I only have access to these screening resources in most of my teaching rooms
- The state, existence, size and quality of the blackboards in the lecture room
- Content is defined by the curriculum and intended learning outcomes
- Copyright/IPR issues are not applicable because I only use something once, and this would fall under 'Fair Use'. I study New Technologies, so using something once is about as long as the work is in 'date'
- Price of text books; easy availability of books; if books are or can be used in other courses; if a book is available both in print and online
- Support/experience of colleagues
- By 'technical competence' I mainly mean issues of translation. After many years of asking, I have given up any hope of useful technical/creative input relevant to my subject from my college's computing area
- My knowledge competence of developing forms of interactive learning materials

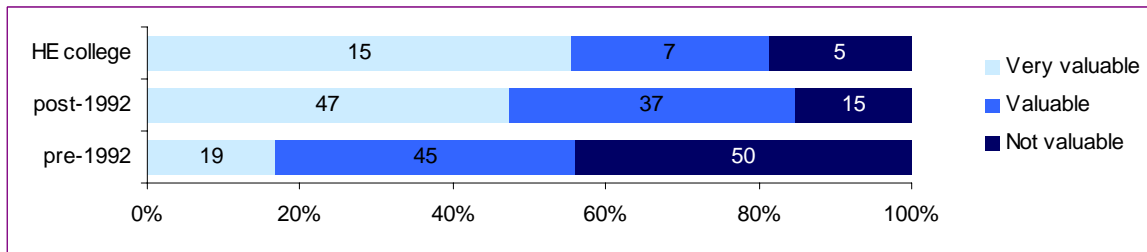
Having investigated the use of various formats, it was thought important to find out how valuable these were to respondents in their teaching. Fig 5 illustrates the responses to this question; once again printed textbooks were popular and were most often chosen as being 'very valuable' (60.5%). Articles in refereed electronic journals were the next most often chosen in this context (53.9%), followed by articles in refereed print journals (45.4%). Datasets were 'very valuable' for only 10.5%.

Fig 5: Value of various formats for teaching

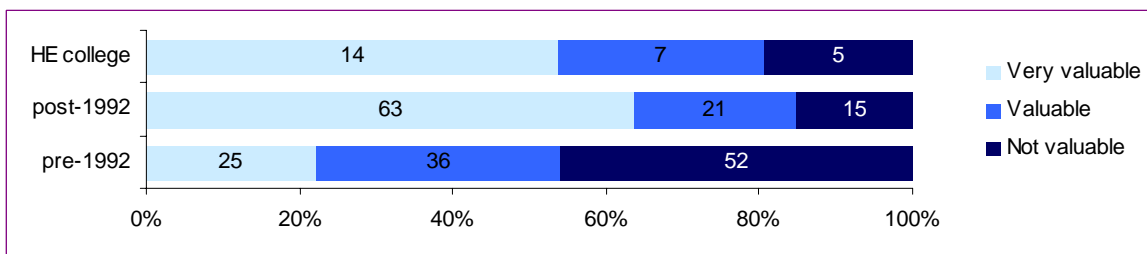


There were a number of differences found between respondents from different types of institution. Fig 6 illustrates the responses where statistically significant differences were found (all with $p < 0.05$, or better).

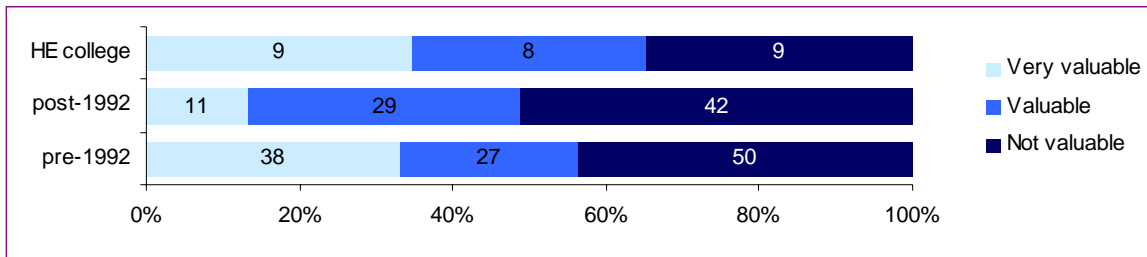
Fig 6: Value of formats for teaching by institution type
Articles in professional journals (print)



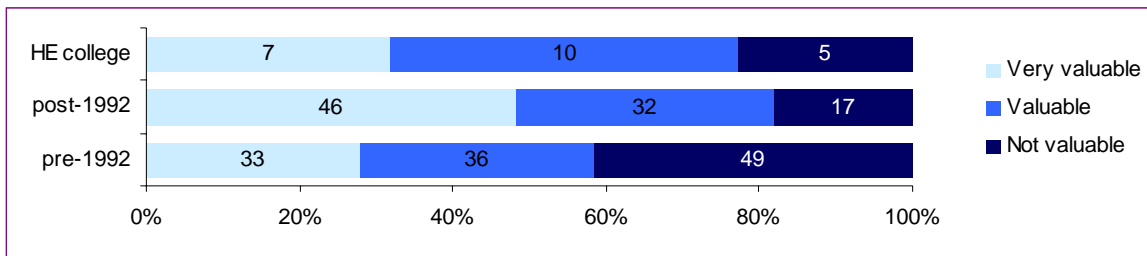
Articles in professional journals (electronic)



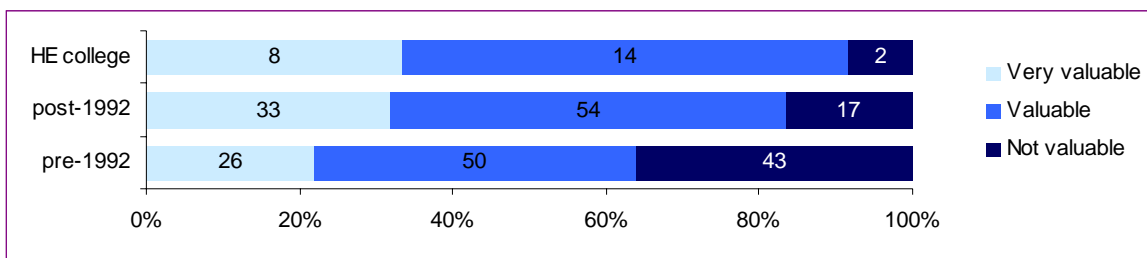
Research monographs (print)



Textbooks (electronic)



Non-scholarly resources, e.g. magazines, newspapers, popular websites, broadcast media



Respondents from pre-1992 institutions were significantly less likely to rate articles in professional journals, whether print or electronic, as 'very valuable' and significantly more likely to rate them as 'not valuable'. Those working in post-1992 universities were significantly less likely to find research monographs 'very valuable', and more likely to find electronic textbooks 'very valuable'. Respondents from HE colleges were least likely to find non-scholarly resources of no value.

Fig 7: Value of formats for teaching by university type
Articles in refereed journals (electronic)

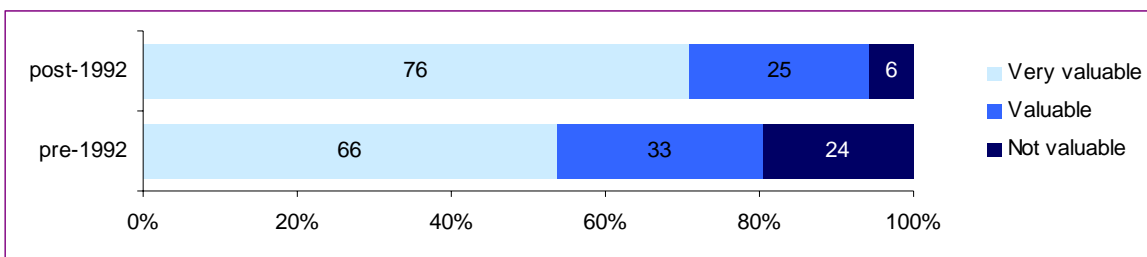


Fig 7 compares the responses from university based respondents concerning electronic journals – there were insufficient responses overall finding such material 'not valuable' to include HE colleges in the formal comparison. Respondents from post-1992 universities place

significantly higher value on articles from e-journals than do those from pre-1992 universities ($p < 0.01$). There was no difference in the responses of these two groups concerning articles in print journals, or electronic research monographs.

There was no difference between the three types of institution concerning the value of databases for teaching. It was only possible to make formal comparisons between the two university types for conference proceedings and datasets; neither showed any statistically significant difference in response patterns. Printed textbooks were thought 'valuable' by almost all respondents; there was insufficient data to make formal comparisons by type.

Creation of teaching material

In an attempt to investigate the use of the new technologies in the creation of teaching material, participants were presented with a list of these and asked to indicate whether they ever produce teaching material using each one. As can be seen from Table 8, none of the technologies is being used to a great extent by the survey respondents, but 32.1% of those responding use discussion lists and 15.1% use simulation software when creating teaching materials.

Table 8: Creation of teaching material

	<i>Number using</i>	<i>%</i>
Discussion lists	70	32.1
Simulation software	46	21.1
Wikis	30	13.8
Blogs	28	12.8
YouTube	23	10.6
Computer games	11	5.0
Any other social software supporting group interaction	10	4.6
Total	218	100.0

When asked to provide details of other social software supporting group interaction, four respondents cited Blackboard (one specifying Blackboard discussion pages) and two Moodle. Another participant noted the use of WebCT and another the WebCT course system, suggesting that they find it adds little as yet over a simple web site used as an electronic archive. A third respondent uses the institution's VLE (unspecified). One respondent was just starting to incorporate the technologies into teaching and at the other end of the scale, was the suggestion that another uses "Everything ... this is what I study". Other responses were as follows:

- Online questionnaires on electronic magazines' websites
- Microsoft Producer
- Sometimes these are helpful, but often not in the main reading lists (references are made in lectures and seminar presentations)
- SMIRK - recording audio over PowerPoint presentation slides.
- Intranet

- del.icio.us, yahoo photos, flickr, odeo, vimeo, technorati, ourmedia, blackboard, blogger, freevlog
- Electronic self-assessment software
- Chat and discussion boards

It was obviously important to find out whether respondents' institutions provide VLE software for the creation of course materials. The survey showed that 72.7% of participants had access to such software, and encouragingly only 1.6% did not. 45 respondents (14.8%) did not know whether they had such access; a further 33 (10.9%) did not reply. Contrastingly, when asked whether they ever use VLE software, 58.6% did so; 25.7% did not. Only 4.3% did not know, with 11.5% not replying.

Leading on from this question, respondents were asked to give details of which VLE software is available to them. The replies have been summarised in Table 9, from which it can be seen that Blackboard is the most popular. This is not surprising, given some of the other responses to this questionnaire, discussed above and below. Again not surprising is the fact that WebCT and Moodle are the joint second most popular. There were several participants whose institutions are providing access to more than one type of VLE software. In addition, the Universities of Wolverhampton, the West of England and York have their own dedicated VLE software of which their members of staff are aware. It is noteworthy that six of those who were using WebCT stressed that their institution would be changing to Moodle for the following academic year. Other VLE software listed is as follows: BrightSpark, CourseGenie, LEARN, Learnwise, MS Outlook Base, My Portal, Sharepoint, Ulearn, Vision and Vista.

Table 9: VLE software available to respondents

	<i>No of responses</i>	<i>%</i>
Blackboard	138	58.2
Web CT	27	11.4
Moodle/Moodle based proprietary system	27	11.4
In-house system	9	3.8
Not sure	7	3.0
StudyNet	6	2.5
Other	13	5.5
Total respondents	237	

Following this, there was a question asking whether respondents collaborate with others when providing teaching material – the examples of other academics and librarians were given. A total of 55.9% indicated that they do collaborate in this way, whilst 33.2% do not. Those working in Medical and related subjects were significantly more likely to collaborate ($p < 0.01$) and those in Science and Engineering were significantly less likely to do so ($p < 0.01$). Those who replied affirmatively were asked to provide further details.

Of those who offered more information, 53 noted that their collaboration was with the library, usually to ensure adequate resources are available or providing links to the library catalogue within reading lists. One participant noted that they were involved with library searching sessions run by their Library Link tutor.

In addition, 47 participants stated simply that their collaboration was with other academics. One of these commented that they may discuss the bibliography with a colleague who shares the same interests or ask him/her to look at the handouts to see if they are accessible. A further 25 noted that academics teaching the same module (team teaching) were their focus for collaboration. In these cases, modules are taught by a range of staff and so module handouts and blackboard sites will be produced by a teaching team rather than by an individual member of staff. This involves the discussion of possible format, content, reading lists, responsibilities and also uploading information for the institutional VLE. Also included was collaboration with academic colleagues regarding resources, the example given being moving image clips. There were several comments relating to the sharing of materials – one respondent uses research results to supplement the interest of course materials so asks for input from colleagues, and another shares materials with a range of academic and non-academic colleagues across their institution. In addition there was the sharing of articles, music and textbooks or the use of common files or documents in which each person contributes materials for development as teaching and learning resources or reusable learning objects. There was also a respondent who noted that their courses are modular, and usually involve more than one lecturer; coordination is therefore important.

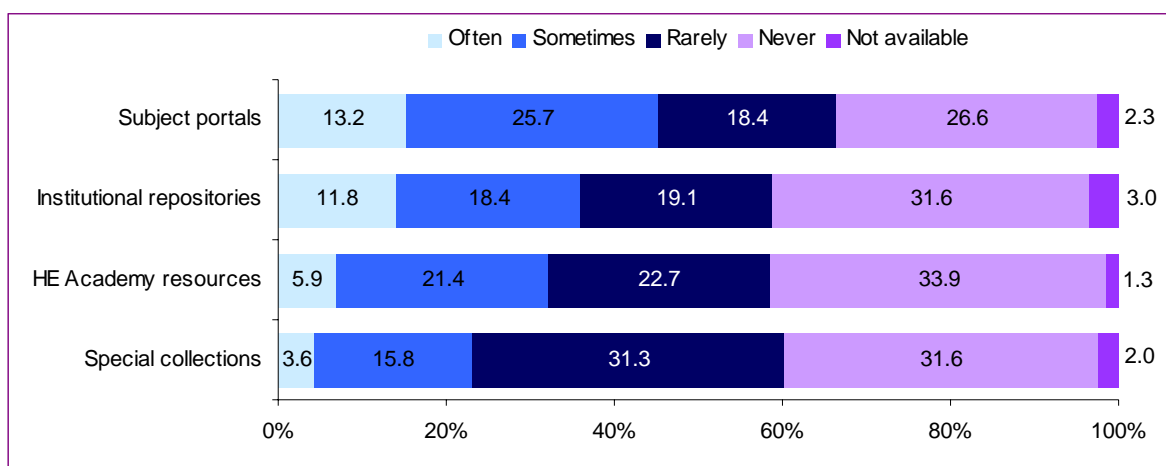
Other individuals with whom respondents were collaborating were IT staff and computing support staff (6 respondents); the Centre for Academic Practice (2); e-learning support team (2); software designers; copyright officer, the bookshop; curators and technical staff (all with one response). Others collaborate with learning support services, learning resources staff/ and the Learning Technologist. Lastly, two participants cited collaboration with researchers and colleagues in other institutions with whom they occasionally exchange ideas and material; another discusses how support materials are given and its content with other academics from similar institutions.

Other comments included helping colleagues to set up Blackboard sites and offering advice on the range of use of Blackboard and the sharing of resources, e.g. PowerPoint presentations.

Other resources

Some helpful resources which might be expected to be generally available for teaching were listed; respondents were asked to indicate how often they used these. As can be seen from Fig 8, the most often used resource is subject portals, with 38.9% of respondents at least sometimes using them in their teaching. Institutional repositories were the next most popular resource. There were no statistical differences according either to subject or institution type.

Fig 8: Frequency of use of widely available resources for teaching



Creating digital outputs

Respondents were then asked about using software to create digital outputs in a teaching context, any support for such use and whether they have sufficient knowledge to achieve their targets when creating digital outputs. Table 10 shows that around half of all respondents have support within their department for using software to create digital outputs, although statistical tests showed that those working in HE Colleges were significantly less likely to have such support ($p < 0.01$). A similar proportion – 46.4% – have experience of using such software. A lower proportion – 31.6% – feel that they have sufficient knowledge to achieve their aims when creating digital outputs.

Statistical tests showed that those teaching in Science and Engineering were significantly more likely to have experience of using software to create digital outputs and that those in Medical and related subjects were significantly less likely to do so ($p < 0.01$). Those in post-1992 universities were significantly less likely to have experience of using this software ($p < 0.05$). In addition, those teaching in Science and Engineering were significantly more likely to feel they have sufficient knowledge when creating digital outputs ($p < 0.01$).

Table 10: Creating digital outputs

	Yes (%)	No (%)	No response (%)	No incl.
Do you have any experience in using software to create digital outputs, for example, knowledge of HTML, Dreamweaver, MS FrontPage and so on?	46.4	43.1	10.5	272
Is there support within your Department for using such software?	51.0	33.9	15.1	258
Do you feel you have sufficient knowledge to achieve what you want when creating digital outputs?	31.6	54.3	14.1	261

Those who felt they had insufficient knowledge to achieve their aspirations when creating digital outputs were asked to comment on whether they think this is because of a lack of the appropriate training. Of those who went on to answer this question, just over half (51.7%) thought this was a result of a lack of the appropriate training; 25.6% felt it was not and 22.7% did not know.

Comments relating to teaching issues

Participants were invited to make comments relating to teaching issues which were not covered elsewhere; these tended to reinforce the responses to the questionnaire. It was interesting that several respondents again noted time as being a barrier to their use of varied forms of scholarly output in teaching. This included a lack of time to attend training (where it is available) and time to prepare, experiment with and revise the support material for a module. This was particularly true in cases when participants were part-time or not sure how likely they were to use the technology, and it was suggested that the task might need to be undertaken by others on behalf of individual academics. Some noted that they had been able to train themselves up to this point; one noted a lack of adequate funding to attend training. One respondent felt that their institution would prefer them to spend their time on teaching and administration and continually organises in-house training to try and bring this about. Conversely, a different respondent thought that “high quality teaching is not valued in the institution”, suggesting that the view of the management is the less time spent on it the better; the participant was not in agreement. Another was not certain whether the time involved in learning and producing electronic material is of benefit, either to students, or “in terms of institutional recognition which is zero for teaching when it comes to serious money rather than the odd award”.

Several respondents were just beginning to use the newer technologies. Where there was growing support within individual departments, development was likely to be at an early stage. One example was where one course had been put on the VLE – this was not a course taught by the respondent, but they were sure other courses would be treated in the same way. Conversely, there was also identified a lack of consistency in approach across the department (“still some early adopters and some laggards”), which perhaps “militates against coherent use of software because of problems with managing student expectations”.

There were mixed feelings about Blackboard, with one comment that it is easy to use and serves the user’s purpose very well. On the other hand, another person noted that they did not like Blackboard or any other VLE and would only use it when forced to. There was also one participant who would be keen to use digital media a lot more, but was inhibited by the limitations of Blackboard. This participant had been required to develop some HTML resources, “but could do more with more training and /or support”, and the tools they are using at present are not sufficiently interactive for their purposes. They also commented that the way Blackboard has been implemented at their institution is not flexible enough and they see development of digital materials to support distance learning as a key activity for the future.

Some participants were concerned about the opinions and reactions of their students towards different kinds of scholarly output. For example, one noted that appropriateness and student response are factors in creating/using digital media; another that several of their students do not like electronic books and prefer handouts to Blackboard and electronic means of delivering lectures. It was also commented that “students are often less adept at and/or disposed to using electronic resources than we tend to assume”. Lastly, the comment was made that one teacher was attempting to diversify their course material in terms of electronic output, but was still surprised to find as the major limitation on this the willingness of supposedly technologically literate students to access it.

A very detailed comment was received, as follows: “I, and many of my colleagues, actively discourage the use of blogs, discussion boards and wikis unless they themselves are the subject of debate – the quality of the research and thinking behind such material is

woeful. Please, let's not get carried away with the new, bright, shiny toy – just because it's the way some people have got into the habit of learning, doesn't mean it's any good. With reference to providing material only online, an equity issue has arisen – students have (rightly) complained (a) that they pay high fees, so we should bear the costs of supplying materials, not them (for printing etc) and (b) that the costs fall unfairly on the least advantaged students, including some from overseas whose native currencies have low UK purchasing power. Therefore I only provide stuff online that I also provide in printed form.”

Some concerns relating to printed compared to electronic materials were expressed. For example, it was felt that the survey was “obsessed with VLE and electronic means”, and this is misguided because “the great bulk of serious scholarship is in print – and so also should be the direction in which students are pointed”. Another comment noted the importance of multi-formats whilst recognising the need to avoid becoming fixated with technology. One response related to the use of PowerPoint to deliver lectures backed up by detailed handouts; the participant wonders why anything more is needed. Lastly, a perceived lack of recognition of textbooks was described by a respondent who would have liked to have written such material, but, noting that these are not valued by promotion panels and the RAE (<http://www.rae.ac.uk/>) had not done so. This person believes this factor may “seriously disadvantage not only students but also other academics, for whom textbooks serve as useful summaries of work outside their own areas”.

Some personal concerns related to reluctance about creating new kinds of scholarly output. One respondent was near retirement and so had decided not to attend training; another thought is not their job to create digital output. A third is reluctant to use any resource that they are required to learn to use but recognises that there will come a time when they will be compelled to do so. Another noted not being technically minded; someone else did not understand the possibilities of new software so was not fully aware of what they thought might be their ignorance.

Just one respondent noted a lack of awareness and knowledge of online learning and technology amongst senior management. Another saw a deficiency in technical support in that many of the available teaching rooms only support the use of DVD/Video; this means it is not possible to use other digital resources. This person also suggested that “an old-fashioned white board and pen is much more reactive and easy to use than a smart board, PowerPoint presentation or Moodle site when teaching - and students prefer it”.

Research

Dissemination of output

The first question relating to research concerned output dissemination. Respondents were provided with a list of possibilities and asked to rate how often they made use of each one; the results are presented in Table 11 below. As can be seen, articles in refereed print journals (53.1%) and conference papers (47.8%) are the most popular for ‘often’ disseminating; this is not surprising, given the emphasis placed on such outputs by the RAE. Indeed, the four top answers are those on which the majority of emphasis is placed for the RAE. Furthermore, a participant commented on this, suggesting that they use what is recognised by the University in terms of rewards and what is regularly used and read by their colleagues.

The less formal kinds of publication were not particularly popular – whether print (e.g. magazines) or electronic (e.g. e-zines). Indeed, the highest proportion of ‘never’ responses was for e-zines. Furthermore, the general opinion that electronic books are few seems to be reflected in the low proportions of respondents ‘often’ or even ‘sometimes’ disseminating their research output in examples of these.

Table 11: Dissemination of research output

	Often (%)	Sometimes (%)	Rarely (%)	Never (%)	No incl.
Articles in refereed journals (print)	53.1	30.7	9.8	6.3	254
Conference papers	47.8	36.9	9.4	5.9	255
Articles in refereed journals (electronic)	36.7	26.5	12.4	24.3	226
Chapters in books (print)	22.8	36.6	17.7	22.8	232
On your personal website	18.3	13.6	11.3	56.8	213
Conference posters	18.2	30.2	24.0	27.6	225
On your institutional website	17.4	24.7	18.7	39.3	219
Articles in professional journals (print)	14.4	27.1	24.9	33.6	229
Research monographs (print)	13.0	22.2	17.6	47.2	216
Textbooks (print)	11.2	24.6	17.0	47.3	224
Articles in professional journals (electronic)	10.3	16.8	24.3	48.6	214
Chapters in books (electronic)	9.0	14.8	12.4	63.8	210
Institutional repositories	8.1	11.8	17.1	63.0	211
Subject repositories	7.2	12.0	17.3	63.5	208
Other digital output forms such as blogs, wikis, etc	5.5	6.0	10.4	78.1	201
Textbooks (electronic)	5.3	9.6	14.8	70.3	209
Research monographs (electronic)	5.2	11.3	15.1	68.4	212
Magazines (print)	3.2	19.0	28.2	49.5	216
Broadcast media	2.4	12.1	22.7	62.8	207
E-zines	2.4	5.4	12.2	80.0	205
Newspapers (electronic)	1.4	7.2	14.0	77.3	207
Newspapers (print)	1.4	12.5	21.8	64.4	216
Other	4.4	1.1	3.3	91.1	90

Other places in which respondents noted disseminating their research included websites of other institutions (2 responses), a research website, research seminars, workshops, press conferences, press releases, industry seminars and events, project documentation and DVDs. The more specialist dissemination outlets were professional theatre shows, exhibitions, freelance education work, delivery talks on art. One respondent disseminates direct to students via teaching methods and another noted on-line archiving of research activities and events with colleagues using simple HTML web sites (usually free sites).

There were five respondents who were new researchers and had only just begun considering the dissemination of their research; one had their first conference paper approaching. One had replied mostly ‘never’ because they were only just beginning to publish their work rather than because they would not want to publish in the various forms; another awaited their supervisor’s guidance as to where to publish.

Dissemination of research output in collaborative software

In order to find out to what extent research is being disseminated via the new technologies, respondents were then asked to state how often they discuss their research in discussion lists, blogs, wikis and other collaborative software. As can be seen from Table 12, very few participants are making use of these technologies. There were no statistically significant differences between subject and according to institution type.

Table 12: Discussion of research in collaborative software

	Often	Sometimes	Rarely	Never	No incl.
Discussion lists	3.5	12.0	18.6	65.9	258
Blogs	1.2	4.4	9.6	84.7	249
Wikis	0.8	3.3	10.2	85.7	245
Other collaborative software	0.6	1.7	1.7	96.1	178

The other collaborative software listed was as follows:

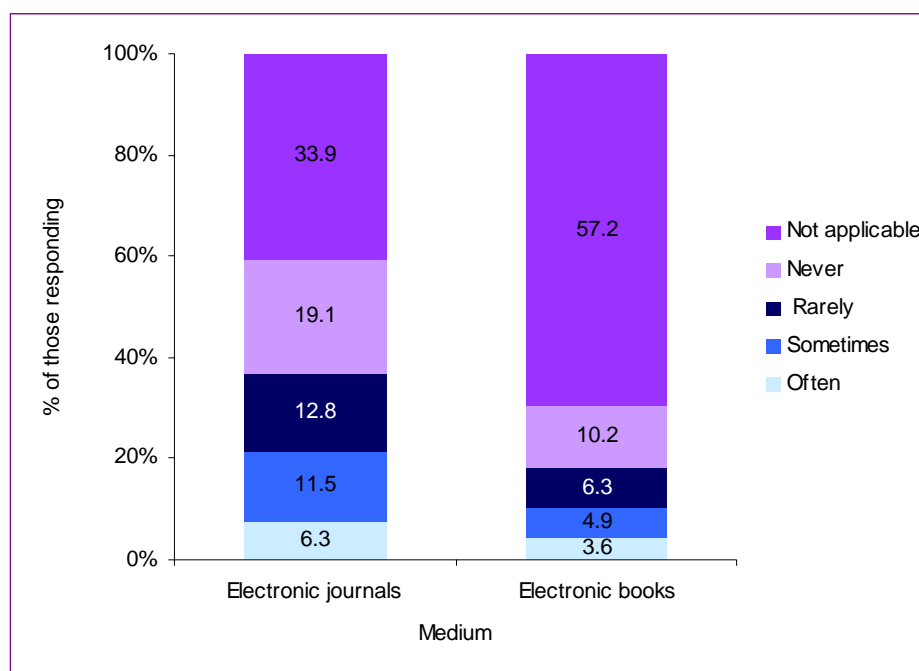
- Academic/professional discussion board in field
- Collective construction of purpose build web-sites to archive specific research activities
- E-mail
- Experimenting with CiteULike (a free online service to organise your academic papers)
- Within discussion boards

One respondent also commented that they disseminate research “with colleagues in the real world!” Although this is clearly not a type of software, the point being made is clear.

Publishing in electronic journals and electronic books

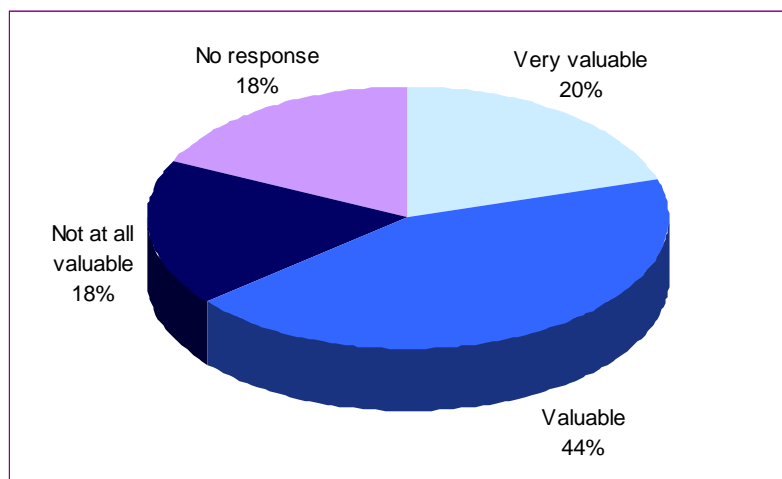
The importance of electronic source materials was recognised with questions relating to the inclusion of hyperlinks (apart from references and bibliography) when publishing in electronic journals and electronic books. Fig 9 summarises the replies and shows that, in both cases, the respondents were unlikely to include hyperlinks ‘often’. Furthermore, in each case a relatively high proportion of participants considered this issue ‘not applicable’ (33.9% for electronic journals and 57.2% for electronic books).

Fig 9: Frequency of inclusion of hyperlinks (apart from references and bibliography)



Moving on to the value of hyperlinks when reading journals, Fig 10 shows the responses relating to this issue. It can be seen from the table that the majority of those responding selected 'valuable' here; the other options were 'very valuable' and 'not at all valuable'.

Fig 10: Value of hyperlinks when reading journals



Since it was thought that there might be a link between the inclusion of hyperlinks and views about their value in electronic journals, the responses to the questions relating to these issues were compared (Questions 21 and 23 – *see Appendix*). The results of the comparison can be seen in Table 13. Those who do not find hyperlinks valuable when reading journals do not, in general, include them when publishing. However, the opposite is not necessarily the case – 15% of those who find hyperlinks 'very valuable', and 18% of those who find them 'valuable' never include them when publishing. Of the 245 respondents who replied to both questions, all who 'often' include hyperlinks find them 'valuable' or 'very valuable'. However, when reading journals 40.2% of those who never include hyperlinks find them 'not at all valuable'.

Table 13: Value and use of hyperlinks

Q21: When publishing in electronic journals, how often do you include hyperlinks apart from references and bibliography?	Q23: How valuable do you find hyperlinks when reading journals?			
	Very valuable (%)	Valuable (%)	Not at all valuable (%)	Total (%)
Often	5.3	2.4	0.0	7.8
Sometimes	5.3	8.6	0.4	14.3
Rarely	1.6	12.2	2.0	15.9
Never	3.7	9.8	9.0	22.4
Not applicable	8.2	20.0	11.4	39.6
Total	24.1	53.1	22.9	100.0

No of respondents = 245

Sources of material for research

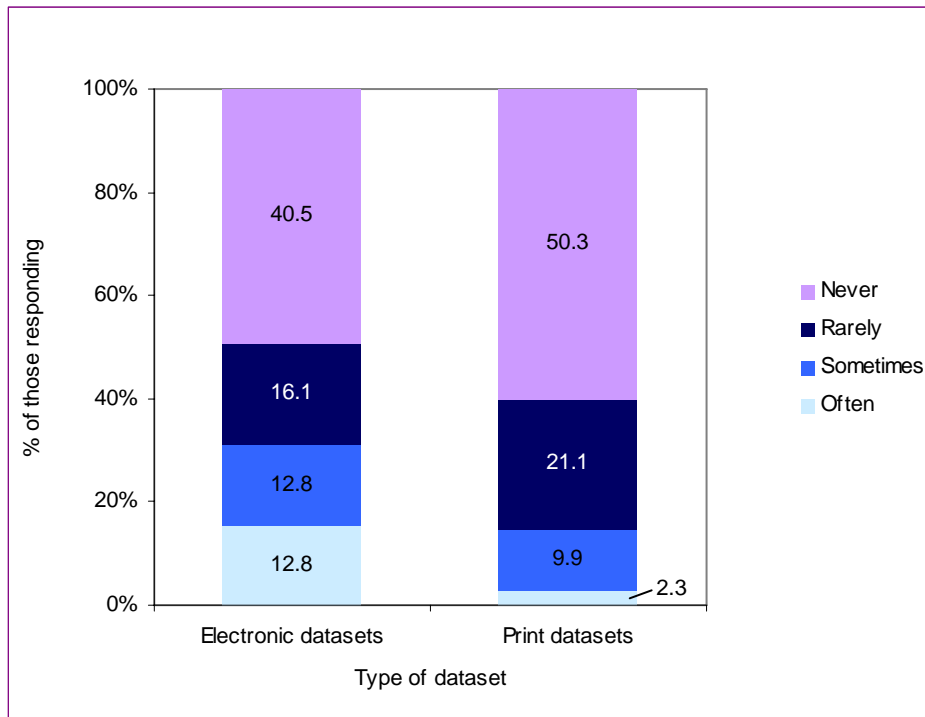
Respondents were asked to consider the importance of various kinds of scholarly output as sources of material for their research. To this end, participants were presented with a list of relevant outputs and asked to rate how valuable they found these in their research. As can be seen in Table 14, articles in refereed electronic and printed journals were most often rated as 'very valuable'. The third rated output was informal communication; perhaps not surprising, given RAE concerns, is the fact that the least important output was non-scholarly resources. Statistical tests showed that respondents from pre-1992 universities were significantly more likely and those from post-1992 universities were significantly less likely ($p < 0.05$) to rate articles in printed professional journals 'not at all valuable'. In addition, pre-1992 university researchers were significantly less likely ($p < 0.01$) to rate articles in professional electronic journals 'very valuable'; those from post-1992 universities were significantly less likely to rate these 'not at all valuable' ($p < 0.01$). These findings reflect those related to scholarly output used in teaching. There were no statistically significant differences according to subject discipline.

Table 14: Value of outputs as sources of material for research

	Very valuable (%)	Valuable (%)	Not valuable (%)	No incl.
Articles in refereed journals (electronic)	79.1	17.0	4.0	253
Articles in refereed journals (print)	76.7	21.3	1.9	258
Informal communication such as talking to colleagues	57.2	37.4	5.3	243
Conference proceedings	41.7	46.5	11.8	254
Articles in professional journals (electronic)	42.9	30.2	26.9	245
Research monographs (print)	42.3	35.3	22.4	241
Databases	41.1	29.9	29.0	241
Textbooks (print)	40.6	47.3	12.1	239
Articles in professional journals (print)	37.3	38.2	24.5	249
Research monographs (electronic)	30.8	36.3	32.9	234
Textbooks (electronic)	24.7	42.9	32.5	231
Datasets	20.4	29.6	50.0	226
Non-scholarly resources, e.g. magazines, newspapers, popular websites, broadcast media	16.7	43.9	39.3	239

Table 14 shows that only 15.1% of respondents considered datasets to be ‘very valuable’ in their research (with 22.0% rating them ‘valuable’ and 37.2% rating them ‘not valuable’). However, these were thought to be a recent and potentially very useful innovation for researchers, so respondents were asked to give details of how often they made use of them. Fig 11 shows the responses relating to both electronic and print datasets; it is clear that these were not used particularly often, but electronic datasets were more popular than those in print.

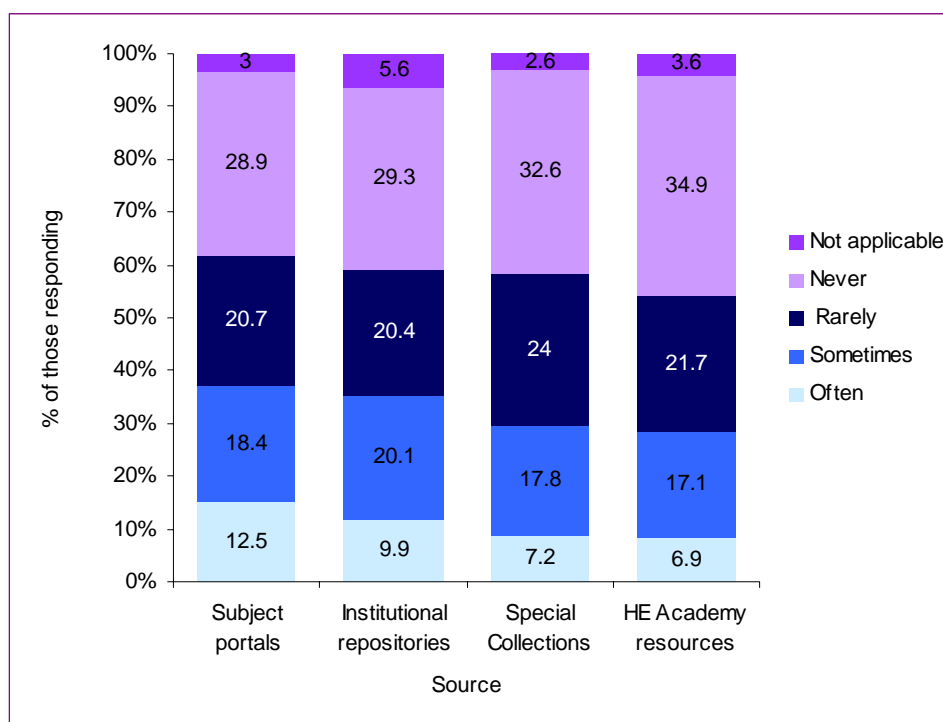
Fig 11: Frequency of use of electronic and print datasets



No included = 254

Respondents were then asked to rate their frequency of use of institutional repositories, special collections, subject portals and HE Academy resources. As can be seen in Fig 12, subject portals were most likely to be used ‘often’, followed by institutional repositories. However, none of the sources were used particularly often in the respondents’ research.

Fig 12: Frequency of use of independently owned sources



No included = 259

Potential barriers to research

Furthermore, respondents were asked to give an indication of potential barriers to research. The responses are summarised in Table 15, from which it is clear that feelings were similar with regard to all four choices. It can also be seen that none of the four options seemed 'often' to be a particular barrier.

Table 15: Potential barriers to research

	Often (%)	Sometimes (%)	Rarely (%)	Never (%)	No incl.
Lack of the appropriate technology to access electronic articles	8.9	17.5	36.6	37.0	257
Lack of the appropriate training in using available technology	8.4	22.4	31.6	37.6	250
Lack of the appropriate technology to access electronic media, e.g. images	6.3	20.3	36.3	37.1	256
Lack of the appropriate technology to access electronic books	5.5	20.1	38.2	36.2	254
Other	31.6	7.9	7.9	52.6	76

The two main issues cited as other potential barriers were time and access to materials. Firstly, many respondents noted a lack of time – to do research, to engage with electronic sources, to explore further possibilities and for training. As one respondent commented, “I’m afraid that I often simply don’t have/make the time to find out about new resources. Having said that, responding to this survey has made me realise that I’m not too bad in this regard!” and another noted “Time is precious; no time really to look into these things”. When considering the

availability of training, the comment was made that, if training is available they are unsure of which is the most appropriate and do not have time to find out.

On the second issue, several respondents noted that their institution's library had not subscribed to all the journals they require, either in print or electronically. In the case of electronic journals and electronic books (although it was commented that few books are available electronically), it was therefore often the case that the technology was in place but the journal required was not available. This was attributed to a lack of funding within the institution, and one respondent questioned the high subscription fees some journals charge for electronic access. Having no budget to buy articles that are only available when paid for was also a concern. Two participants noted that having to go physically to the library to photocopy journal articles from the printed source when there is no licence for e-access was time consuming. Another noted that institutional subscriptions to electronic versions of printed journals often do not extend back as far as the cessation of the printed form in the library, thereby leaving some editions not available. The bundling of journals yielding some useless sources and omitting other, more useful ones was also perceived to be a problem.

A more general lack of licences and of access to electronic media were also cited, and a lack of access to material held in professional audio-visual archives (both audio visual material and written material) is the biggest hindrance in one participant's research into the history of broadcasting.

Cost was an issue, for example, accessing relevant datasets can represent a significant cost as can the continual need to buy and upgrade relevant software. Cost was also cited in terms of lack of funds for travel and subsistence for training and a lack of capital resources and studio space.

Some computing issues were raised, the first being that there is always a learning curve with any new software, and the second being the lack of information about which software tools to use for a particular problem – both of these can act as a barrier. Another respondent gave details of a lack of willingness on the part of their Computing Services to allow access to external resources which require traversal through firewalls. Lastly, one respondent took the opportunity to cite their lack of “own motivation to learn yet more electronic stuff that I really find a bore”.

Comments relating to research issues

Respondents were invited to make comments relating to research issues which they thought were of importance. In common with the comments relating to teaching, respondents agreed that a key constraint to research is time availability rather than technological issues. It was also clear that some participants were experiencing difficulties balancing their teaching load with research. Indeed, one comment was: “research activity is minimal and stands only about 5% of time”. It was even suggested that research within one participant's institution was encouraged for the sake of it, and that its relevance and rigour were not important, and that another was carrying out research in their own time rather than work time. A third is so occupied with teaching that they have little time for anything other than updating their teaching resources rather than their own research. The difficulty for this person is that there is a lot of information available and some judgement has to be made as to the quality of the work; they recognise the usefulness of journals in this respect. Conversely, it was noted that electronic resources make research more viable for many staff under pressure to research and teach.

To this end, some respondents think it is a problem that they do not have access to “key electronic journals, e.g. JSTOR” or Project Muse. Ever wider availability of electronically archived journals and books is thought to be necessary; electronic journals in general had made the one researcher’s work much more effective. Another participant noted that, “from a researchers’ point of view, the increasing availability of resources online is an extremely welcome and helpful development. So much information is now just a mouse-click away. The biggest single problem is that hyperlinks can change or disappear in quite a short space of time – for this reason I always prefer online resources which can be downloaded and saved (e.g. documents in Word/PDF).”

Interestingly, some detailed information was offered relating to theoretical physics research. This suggested that “journals (paper or electronic) published since the early 1990s have become irrelevant, except for accreditation for the RAE, promotional purposes and the like. The community works almost exclusively from the electronic archive, arXiv.org. We are quite willing to act as our own referees, if necessary, although it is the journal articles (if published) that will be cited in references. It is for that reason alone that journals still have a use”. This presents a singular case of scholarly output coming to rely increasingly on an electronic method of presentation.

There were some comparisons between print and electronic materials. One respondent does not see much difference between the two and is willing to use what they can easily get hold of; another tends only to “use e-journals which have print versions (probably a credibility issue)” and only uses electronic books “for quick checks”; this person much prefers print for reading and will print out electronic sources for such purposes. This may be a relatively widely held view. Along similar lines was the comment that “although catalogues online are very useful I just like to read books and touch original documents. I like to read books in, for example, British Library, Wellcome Library. I prefer the page to the screen”. Another interesting comment related to electronic books – the respondent was not aware of any relevant electronic texts and thought these were not being “pushed” by publishers to either authors or readers.

Some pro-print opinions were also expressed – the first argued that, although they thought they should learn how to use computer technology, they find it very “boring and very time consuming”. A second noted that they “enjoy research but still do most of it by traditional methods”.

Only one participant commented that the barriers to electronic-based scholarly output they have encountered are “mostly institutional: slow network/poor computing facilities, rather than inappropriate technology”.

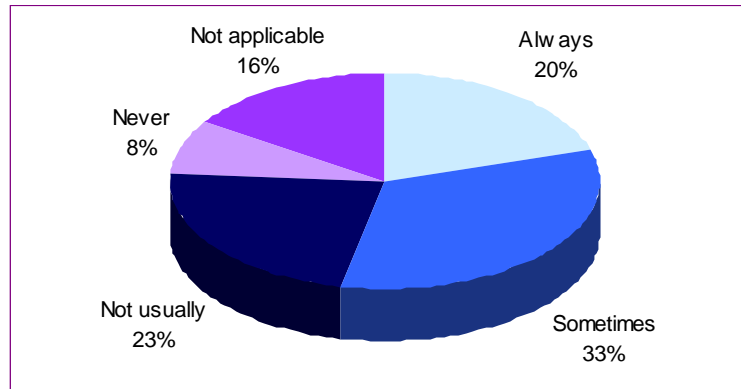
Intellectual Property Rights (IPR) issues

Clearing copyright for teaching purposes

IPR issues are often confusing for those who encounter them; this is a common problem for both researchers and teachers, who are constantly creating and making use of original material. In the context of the survey, respondents were asked whether they believed they can reproduce any third party materials for teaching purposes without having to clear copyright. A clear majority of participants (88.5%) replied negatively, and only 9.9% replied ‘yes’. Those who replied with ‘No’ were asked to go on to indicate how often in practice they check for themselves whether permission is necessary to reproduce materials for teaching purposes. As can be seen

from Fig 13, the highest proportion of respondents do this ‘sometimes’ (30.3%), although as many as 20.7% replied ‘not usually’.

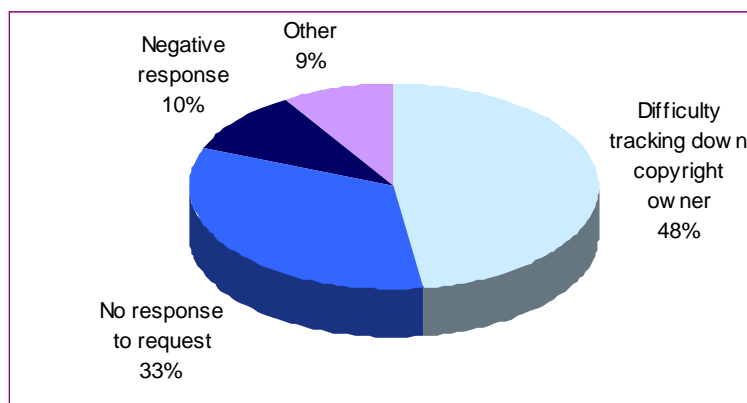
Fig 13: Frequency of checking for yourself whether permission is necessary to reproduce materials for teaching purposes



No included = 277

There is evidence that certain problems are encountered when attempting to clear rights, so respondents were asked to indicate whether they had experience of any of those listed in Fig 14. As can be seen from the table, the most often encountered problem was ‘difficulty tracking down the copyright owner’ (32.2%), followed by ‘no response to request’ (22.4%).

Fig 14: Problems encountered when attempting to clear rights



No included = 205

Other problems encountered by participants when attempting to clear rights were quite varied. Nine commented on the prohibitive costs of reproducing copyright material; another three indicated that if they think that there might be a copyright problem, they tend to avoid the material. There was also the problem of a need for clear information to be available internally; a further difficulty was a lack of time and support when clearing rights. Contrarily, five other participants had a system for clearing rights, administered by a dedicated person or department. This would have been helpful for the respondent who has trouble knowing who to contact in this situation.

Other participants noted that the copyright conditions are sometimes overly stringent, especially for American journals; they had digitised a lot of materials (e.g. censuses, historical statistics, trade directories and so on) which are out of copyright, thereby side-stepping the issue; another had been “fortunate” always to receive a positive response. Lastly, there was a comment which

suggested that the respondent did not understand the principles of copyright: “I only use something once ... never ever twice. If I had to use something twice I would clear copyright”.

Datasets

Continuing with the idea that datasets are a particularly useful innovation for researchers, participants were asked whether they thought there are any IPR issues relating to these which they and their students should be aware of. The highest proportion of respondents did not know (43.4%); a further 37.2% indicated that the question was not applicable to them. Just 7.2% replied ‘no’ and 6.3% replied ‘yes’ with the remainder failing to give a response.

Those who did reply ‘yes’ were asked to give details. The comments received were as follows:

- For example, we have a strict licence for use of digital OS maps that we have to bring to the attention of our students. There are many similar examples
- YouTube, iTunes, burning CDs etc
- I always try to side step these issues by using materials which are out of copyright or has been published by colleagues who I can ask for permission
- Knowing when and how much to reproduce for study purposes from each source, care in quoting accurately with full credit to sources.
- All materials are potentially protected by IPR and copyright
- We always contact originator before use
- lack of clear statements on copyright
- Full permission given for datasets utilised
- Check conditions on “further” use , e.g. HESA
- Can’t pass to 3rd parties. Need to acknowledge sources of data in publications
- I have used ESRC data archives, and the conditions for use, both for academics and students is clearly set out; also use data from CHILDES, which is free to use as long as you cite the sources shown in the manual on publication
- PGs need to know if and when they can reproduce images at specified resolutions
- Are they sufficiently anonymised to preclude IPR issues
- Only educational use/acknowledge source

Digitisation

In order to investigate the extent of digitisation within institutions, respondents were asked to indicate whether books and monographs were being digitised for teaching purposes on an institutional basis. Only 17.1% replied that they were, with 13.2% replying in the negative. The majority of respondents did not know whether this was happening (67.4%).

Respondents were then asked whether their own work had been digitised for teaching purposes. The majority (66.1%) reported that it had not, whilst 26.3% noted that it had (7.6% did not respond).

Combinations of materials

The last issue relating to IPR was concerned with the ownership of combinations of materials from a variety of sources which have been brought together in a single package. Participants were asked to indicate who they believed owns the IPR in such materials; the highest proportion (44.4%) thought that it is 'the creators or their institutions'. However, 39.8% of the respondents did not know – this is worrying as it is possible that these respondents are contravening copyright legislation on occasion. Only 2.3% thought they owned the IPR in this situation. In fact, the creator of a combination of materials enjoys copyright in that combination as well as the copyright being owned by the creators of each component piece – they all jointly own the copyright in the final work.

It is interesting to compare these results with those of a recent study of attitudes about the rights and rewards for author contributions to repositories for teaching and learning (Bates et al 2007). The authors asked respondents about the policy of their institution on who owns the copyright in teaching materials at their institution, and found that over half (54.9%) of them were unsure about the issue. Believing that their institution owns the copyright were 26%, whilst 12.8% thought that the academic who creates the material is the holder of the copyright.

Comments relating to IPR issues

Several comments were made relating to Question 35 of the questionnaire – 'Who do you believe owns the IPR of combinations of materials from a variety of sources brought together in a single package?' with the options: 'the creators or their institutions', 'your institution', 'you' and 'don't know'. The question was thought to be both ambiguous and overly simplistic. It was noted that the IPR of a work belongs to the original creator or their employer, rather than the creator of a particular combination. Answers were also thought to depend on the size on materials from individual sources being used and the source of those materials, and on institutional arrangements, sometimes multiple institutions in multiple countries.

The general comments relating to IPR issues in connection with scholarly output unsurprisingly showed varying degrees of knowledge on this subject. As two participants noted, this is a potential "minefield", and many researchers seem unaware of the implications. Indeed, one respondent commented, "my relative ignorance of these issues speaks for itself!" Others were more fortunate in having available knowledgeable staff able to provide advice on IPR issues, or even to clear all necessary rights on their behalf.

Other respondents are clearer on the subject of copyright, commenting that they always obtain permission for using other people's materials, and finding other authors to be generally accommodating. However, another has encountered significant variation in attitude to permissions for re-use within the same discipline across owners of IPR. Some respondents avoid copyright issues by using material they are certain is out of copyright or are aware of the "fair use" regulations, staying within them. One participant is aware that this could also depend on institutional licensing arrangements or on whether appropriate rights have been obtained, after which time the conditions of use must be taken into account. There was also one comment to the effect that, in the case of peer reviewed journals, copyright will be with the journal rather than the author.

There were some noteworthy concerns expressed here. The first was "deeply concerned about music rights and payment to musicians for the creative work", feeling that "copyright has become a non-issue to most people due to the convenience of digital tracks and technology in

general". Another concern related to a perception that HE institutions are attempting to oblige staff and students "to relinquish their IPR to the institution" – such attempts are thought to be "deplorable and should be banned". A participant thinks that the biggest IPR issues relate to the use of audio-visual material; this relates to research as well as teaching. Another's impression is that "IPR is a moving target, and that trying to establish agreement about it internationally is about as easy as establishing consensus on climate change".

The more critical comments were as follows:

- It is annoying to have to deal with IPR issues and generally a big waste of time. Scientific research results should be in the public domain but the journals retain copyright of everything they publish, which is a real barrier to using the information in teaching especially. For this reason I am a big supporter of open access information /copyleft/open source software
- I do not see why scanning a few figures or graphs from books or articles for teaching purposes (e.g. to include in a PPT presentation) should require tiresome hunting down of copyright owners and what not! Surely this does not hurt anyone – on the contrary, if anything it I make student and/or colleagues want to read the full chapter or article, so will help both authors and publishers
- It appears an unnecessarily complex area in the HE sector. It would seem appropriate that (with due acknowledgement) materials produced by publicly funded organisations should be freely and readily available for use (this covers the bulk of university output) – in any event there is so little that is not derivative 'true' IPR is somewhat mythical
- **Very** confusing and troublesome law that ought to provide exceptions for teaching purposes and accept that published work is of no value unless someone uses it – use of such material is thus a good thing for everybody!
- Fair use (fair dealing) for teaching purposes is being seriously eroded by rights holders, especially in the digital field, and **must be preserved**. Too often rights holders, including research councils, make blanket claims to copyright that either explicitly or implicitly claim to supersede fair use rights that don't hold water. This must stop.
- It always seems odd that you can tell a group to access an article or chapter and each could legally copy for their own use but my understanding is that if I copy it n times for them (or provide it in an e-format) it is breaking copyright. Ad-hoc use of newspaper materials is also confusing. Some of this confusion is due to apparent changes in the legislation.
- I teach recording – playing audio examples in a large lecture theatre is a very poor way of demonstrating them since the acoustics are so far removed from most listening situations. I would like to offer audio excerpts via a web site with restricted access but I am pretty sure that this would not be possible without a colossal amount of admin to clear each audio example for this use. This is **very** frustrating and affects the quality of teaching provision.

General comments

Finally, respondents were asked to make any general comments on issues not covered elsewhere in the questionnaire. These were as follows:

- A simple one stop process of adding material to VLEs would be very valuable

- Difficult to answer correctly since I do small amounts of ad hoc teaching
- Much of my teaching is through project work with small numbers of students rather than the large classes which are more typical of lecture courses at my institution
- I do not knowingly break copyright law, but work within the regulatory framework as I understand it – I was given training on this a few years ago ... I am very happy for my own work to be used for purposes of teaching and research, and believe that this is part of collegiate scholarship. I come from an education background (teaching in schools), where most colleagues are generous with their ideas and materials, and find that this collegiate spirit is common in education departments in universities
- Hard to answer well in the context of the Open University

Discussion

The results of the survey indicate that, as had been suspected, a relatively high proportion of respondents are providing reading lists (85.9%) and course materials (79.9%) to their students when teaching. The study found that, although printed formats remain the most popular for this purpose, the use of websites is widespread amongst the participants to the survey. This demonstrates that electronic resources are proving valuable at least with regard to these important elements of teaching.

Responses also showed that a relatively large proportion of respondents (71.1%) use printed textbooks and material from refereed print (65.1%) and electronic journals (64.1%) in their teaching; this was not a surprising finding, and confirms the situation which was understood before the research was completed. The results of the study also confirmed that few respondents were using non-scholarly output (e.g. newspapers and magazines) and even fewer were making use of the newer technologies in their teaching. These findings are mirrored by the responses relating to the value of formats for teaching; here the most valued formats were printed textbooks, being cited as 'very valuable' by 60.5% of respondents. The second most valued format was articles in refereed electronic journals (53.9% 'very valuable') and articles in refereed printed journals (45.4%). Here, however, it was clear that electronic sources were more likely to be considered 'very valuable'; this is likely to be due to the convenience of access to electronic sources – this was the subject of various comments relating to the questionnaire.

All of the questions which included issues relating to VLEs (Virtual Learning Environments) showed that Blackboard is the leading software, at least with the participants in this particular survey. Blackboard was mentioned in relation to being a social software supporting group interaction, a format included as part of teaching and for the creation of teaching material. It was also the most widely available software; accessible to 138 respondents – 45.4% of the total number of respondents. This is interesting, because, although some comments were positive about Blackboard, others noted contrary opinions, suggesting that the software has various limitations or has not been implemented in a particularly flexible way within individual institutions. However, any novel software would be likely to provoke such mixed feelings, and it could be that those with negative opinions would feel the same about any VLE software.

It is noteworthy that, when asked about influences over the choice of content for teaching materials, the majority (77.6%) indicated that this was 'often' subject discipline. The availability of print materials in the library was also relatively 'often' a barrier (64.8%); this is clearly an issue since it was also seen as one of the main potential barriers to research. The more technical aspects of this issue, however, were less of a problem and relatively few participants involved in teaching thought that technical competence and support were 'often' an influence. Furthermore, since 72.7% of the respondents have institutional access to VLE software, this was not a problem either.

The survey showed that just over half of the respondents to the survey regularly collaborate when creating teaching material; those who did were mainly teaching in a team. Since social software facilitates collaboration, it is likely that it will be able to aid these participants.

It is notable that students were seen as a potential barrier to using some electronic resources, in the sense that some students either find it difficult, or are unwilling, to use such new technology.

This appears to be counter to expectations, which are generally that, as a group made up of mainly younger people, students will be enthusiastic about embracing new innovations.

When the dissemination of research and sources of material were considered, it was clear that these are clearly linked to the Research Assessment Exercise (RAE). Those publications considered of most value for the RAE are articles in refereed journals, conference papers and chapters in edited books. These were the most popular outlets in which to disseminate research, and were valued most highly as sources of material for research. It is likely that there is a mutual interdependence at work here – if a form of scholarly output is necessary for the RAE, the highest quality research is likely to find its way into this format and therefore be often used as a source of material for research.

The findings related to the inclusion of hyperlinks when publishing in electronic journals and electronic books showed that a relatively high proportion of respondents thought that these questions were 'not applicable'. It is likely that participants in these cases are not regularly publishing in either of these formats, therefore they believe that the issue is not of interest to them. It is possible, however, that their work is ultimately published in electronic versions of the printed formats for which they do write.

A very important finding of the survey was that lack of time was an issue for both teachers and researchers. This involved problems with balancing time spent on teaching with that on research, as well as having time to familiarise themselves with the novel technologies. In teaching this included a lack of time to attend training (where it is available) and time to prepare, experiment with and revise the support material for a module. One of the main issues cited as a potential barrier was a lack of time – to do research, to engage with electronic sources, to explore further possibilities and for training. This is clearly an issue which may have an effect on the uptake of new technologies.

Contrary to expectations, datasets (both printed and electronic) are not being used particularly often by those researchers responding to this survey. It is noteworthy, however, that electronic datasets are more popular than those in print. This is perhaps not surprising, particularly in the case of larger datasets which are easier to manipulate and keep up to date in an electronic format. The lack of popularity of datasets in general is likely to be due to either a scarcity of such sources, or a lack of knowledge of their existence – this is an issue which would lend itself to further research in future.

Lastly, it should be noted that the response to this survey was lower than had been hoped. This was due, at least in part, to the timing; unfortunately the invitation to participate had to be sent out during the Easter vacation period. Indeed, several contacts noted that they thought this would adversely affect response rates due to staff either being away from their desks or otherwise occupied. It may also be the case that potential participants were not sufficiently engaged with the subject matter of the survey and did not feel suitably qualified to give useful responses.

Recommendations for further research

The survey has identified various issues as being suitable for further research. The first of these concerns the views and practices of students. That is, the survey found that some students are either unwilling or unable to make use of certain kinds of scholarly output and it would therefore be valuable to carry out further research into this issue. It is clear that this could act as an

important barrier to the use of such outputs; academics are unlikely to wish to use formats which are unacceptable to those who they are teaching.

Subject discipline is clearly an issue, and the example of those working in theoretical physics research relying almost exclusively on an electronic archive (arXiv.org) is key here. Further research into particular disciplines could be carried out to investigate in more detail whether there are further examples of this kind.

It is very clear from the survey that the RAE has an obvious effect on the use of scholarly output, particularly in the case of research activity. However, there are plans to discontinue the RAE after the next (2008) implementation and research will be needed to investigate the effect of its successor.

As discussed above, the overwhelmingly most prevalent VLE software being used in respondents' institutions was Blackboard. An investigation of the ways in which this software is being employed by those researching and teaching could be combined with a study of how it is being used by students could be of great value to the HE community in general.

Lastly, it appears from this study that respondents are generally confused about the IPR issues relating to all kinds of scholarly output formats. It therefore seems that further research investigating this issue, particularly with regard to the newer technologies could be beneficial.

In conclusion, it can be seen that the picture relating to the use of scholarly output in research and teaching is largely a mixed one. However, it is clear that the new technologies included in the groupings of "social software" and "Web 2.0" have not so far been embraced particularly fervently.

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Appendix: Online questionnaire



A survey of use of different forms of scholarly output

This questionnaire is part of a study funded by JISC investigating the use of different forms of scholarly output. We wish to find out how, when and in what contexts different forms of scholarly output are being used. Your Department has been selected to be part of the study; we would therefore be very grateful if you would help us by taking the time to complete the following short questionnaire by the **extended deadline of 25 May 2007**.

All responses will be treated in strict confidence.

In appreciation of your help, completed questionnaires received by the closing date will be entered into a draw to win one of six £50 Amazon vouchers. If you choose to provide contact details, these will be used solely for the purpose of the prize draw. All responses to the questionnaire will be treated anonymously.

If you have any questions, please contact [Sally Maynard](#).

Institution * required field

Subject discipline * required field

Approximately what percentage of your time do you spend on each of the following: * required fields

Teaching Research Administration/other

Teaching

If your job does not involve teaching, please go to the [next](#) section

1. Do you provide reading lists to your students? Yes No

2. If **Yes**, how are these provided to students? (*please tick all those that apply*)

- As a bibliography
- In a website as links
- In handouts
- Other, *please state:*

3. Do you provide course packs or other teaching and learning materials to your students?

Yes No

4. If **Yes**, how are these provided to students?

- As website materials
- As printed handouts
- Other, *please state:*

5. Which of the following formats do you include as part of your resources for teaching?

- Conference papers
- Conference posters
- Articles in refereed journals (print)

- Articles in refereed journals (electronic)
- Articles in professional journals (print)
- Articles in professional journals (electronic)
- Research monographs (print)
- Research monographs (electronic)
- Textbooks (print)
- Textbooks (electronic)
- Chapters in books (print)
- Chapters in books (electronic)
- Magazines (print)
- E-zines
- Newspapers (print)
- Newspapers (electronic)
- Material from institutional repositories
- Material from subject repositories
- Material on your institutional website
- Material on your personal website
- Multimedia/audiovisual materials including film and television excerpts
- Blogs
- Wikis
- Discussion lists
- Any other social software supporting group interaction *(please give details)*

- Other *(please give details)*

6. How often do the following influence your choice of content when providing materials for students?

	Often	Sometimes	Rarely	Never	Not applicable
My subject discipline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of students in the class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distance learners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether my institution's virtual learning environment (VLE) software allows the use of the format	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provision of institution-wide licences for access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of print materials in the library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copyright / IPR issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My technical competence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The support available to help me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other <i>(please give details)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. How valuable do you find the following for your teaching?

	Very valuable	Valuable	Not valuable
Conference proceedings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in refereed journals (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in refereed journals (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in professional journals (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in professional journals (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research monographs (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Research monographs (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textbooks (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textbooks (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Databases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Datasets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-scholarly resources, e.g. magazines, newspapers, popular websites, broadcast media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Do you ever create teaching material using any of the following? *(please tick all those that apply)*

- Blogs
- Wikis
- Discussion lists
- YouTube
- Simulation software
- Computer games
- Any other social software supporting group interaction *(please give details)*

9. Does your institution provide VLE software for the creation of course materials (e.g. Blackboard, Moodle etc)?

- Yes No Don't know

10. If **Yes**, please tell us which VLE software is provided

11. Do you ever use VLE software?

- Yes No Don't know

12. Do you collaborate with others when providing teaching material (e.g. other academics, librarians)?

- Yes No

If Yes, please give details

13. How often do you use the following for your teaching?

	Often	Sometimes	Rarely	Never	Not available
Institutional repositories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special collections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Subject portals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HE Academy resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Do you have any experience in using software to create digital outputs, for example, knowledge of HTML, Dreamweaver, MS FrontPage, etc?

- Yes No

15. Is there support within your Department for using such software?

- Yes No

16. Do you feel you have sufficient knowledge to achieve what you want when creating digital outputs?

- Yes No

17. If *No*, is this because of a lack of the appropriate training to create digital outputs?

- Yes No Don't know

18. Please use the space below to make any comments you have relating to teaching issues

Research

If your job does not involve research, please go to the [next](#) section

19. How often do you disseminate your research output in the following?

	Often	Sometimes	Rarely	Never
Conference papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference posters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in refereed journals (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in refereed journals (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in professional journals (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in professional journals (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research monographs (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research monographs (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textbooks (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textbooks (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chapters in books (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chapters in books (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Magazines (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-zines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Newspapers (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Newspapers (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Institutional repositories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Subject repositories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On your institutional website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On your personal website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broadcast media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other digital output formats such as blogs, wikis, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other <i>(please give details)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. How often do you discuss your research in the following?

	Often	Sometimes	Rarely	Never
Blogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussion lists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wikis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other collaborative software <i>(please give details)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. When publishing in electronic journals, how often do you include hyperlinks apart from references and bibliography?

- Often Sometimes Rarely Never Not applicable

22. When publishing in electronic books, how often do you include hyperlinks apart from references and bibliography?

- Often Sometimes Rarely Never Not applicable

23. How valuable do you find hyperlinks when reading journals?

- Very valuable Valuable Not at all valuable

24. How valuable do you find the following as sources of material for your research?

	Very valuable	Valuable	Not valuable
Conference proceedings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in refereed journals (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in refereed journals (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in professional journals (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in professional journals (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research monographs (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research monographs (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textbooks (print)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Textbooks (electronic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Databases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Datasets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-scholarly resources, e.g. magazines, newspapers, popular websites, broadcast media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal communication such as talking to colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. How often do you use datasets?

	Often	Sometimes	Rarely	Never
Electronic datasets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Print datasets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. How often do you use the following for your research?

	Often	Sometimes	Rarely	Never	Not available
Institutional repositories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special collections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Subject portals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HE Academy resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. How often do the following act as a barrier to your research?

	Often	Sometimes	Rarely	Never
Lack of the appropriate technology to access electronic media, e.g. images	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of the appropriate technology to access electronic articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of the appropriate technology to access electronic books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of the appropriate training in using available technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please describe any other barriers)

28. Please use the space below to make any comments you have relating to research issues

Intellectual Property Rights (IPR) issues

29. Do you believe you can reproduce any third party materials for teaching purposes without having to clear copyright?

Yes No

30. If *No*, how often in practice do you check for yourself whether permission is necessary to reproduce materials for teaching purposes?

Always Sometimes Not usually Never Not applicable

31. Have you encountered any of the following problems when attempting to clear rights?

- No response to request
- Negative response
- Difficulty tracking down copyright owner
- Other (please give details)

32. Are there any IPR issues relating to datasets you use which you and your students should be aware of?

Yes No Don't know Not applicable

If Yes, please give details

33. Are books and monographs within your institution being digitised for teaching purposes?

Yes No Don't know

34. Has your own work been digitised for teaching purposes?

Yes No

35. Who do you believe owns the IPR of combinations of materials from a variety of sources brought together in a single package?

- The creators or their institutions
- Your institution
- You
- Don't know

36. Please use the space below to make any comments you have relating to IPR issues

LISU

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