

# **An investigation of The issues INVOLVED IN creating a bank of exam questions**

## **An Arcadia Fellowship Project Report**

### **About the Project**

The project explored the potential for the University Library to provide staff and students with personalised resources and services, taking as a test case the Faculties' archives of past exam papers, attempting to provide students with a single web-page linking to all the past exam papers for the exams they are registered to take. A working prototype of the system is available, which can both be developed by the University to provide a central bank of online exam papers, and quickly adapted by the Library to provide users with personalised views on materials such as PhD theses in DSpace or reading lists.

The University Library, although usually thought of as a research library, also has a remit to support the University's pursuit of excellence in education and learning. The Arcadia Programme aims “to explore the role of academic libraries in a digital age [and] create new programmes and services, particularly for undergraduates”. Anyone looking up at the towering stacks of books that fill the University Library can recognise how overwhelming the range of materials can be for students, how difficult the quest to find the most appropriate, intriguing or relevant book can be. Alongside Arcadia projects studying how students learn to discriminate among the resources available to them, a number of Arcadia projects have looked at how appropriate materials can be 'pushed' to library users, this among them. I aimed to pull information about students from the University's student records system, and to use it to personalise the display of material from DSpace, the institutional repository supported by the Library. In total, the project aimed to link together three University IT systems, run by different organisations, together with Google gadgets, in order to create a final result that could be re-used across the University. In parallel, I researched the responses of students, librarians and lecturers to the suggestion of Library-supported provision for exam papers.

Those who have worked on institutional IT projects will know that often the treacle in the system is the need to fit around University policies, timescales and procedures, rather than technical difficulties. This project was no exception, particularly so in that it was often breaking new ground, and University organisations found themselves formulating procedures as we contacted them. At the end of the project, a working prototype is now available. However, this is a long way from being a usable system: we are still waiting for access to data about student exams from MISD, for example, and agreement from the Education Section for us to deposit exam papers into the DSpace repository. Only at this point can people take up the process of introducing this as a formal University-wide system, a process which will no doubt be a long one.

## Best practice in making exam papers available to students and teaching staff online

Looking over past exam papers forms a key part of every students' revision armoury, and so the lack of research on the subject of how past exam papers can best be used in both revision and learning is extremely disappointing. When I began thinking about the issue, a host of questions sprang into my mind: during learning and revision, is it more helpful for students to see the past exam questions themed by topic, or as entire past papers? Are there disadvantages to making too many past exam questions available? How can this type of resource be used to support genuine learning, rather than simply preparation for the test? Very few of these questions have been addressed. In general, it seems that the Universities in the UK simply put long lists of links past exam papers onto the web, and leave it to the students' ingenuity to find out how best to use them.

One notable exception is MyExamopedia, a resource created by Dr Manish Malik of the University of Portsmouth. This tool, based on a simple wiki, allows students to share their answers to questions from past papers with other students anonymously, and to receive comments from Dr Malik. In his words, it is "A collaborative exam revision site that fosters student's informal ways of preparing for exams using past exam papers and helps them improve their solutions to past papers through critical feedback from the academic and peers." The idea is simple, but the results apparently very effective, and this idea could easily be used by Cambridge students and staff. No specialised technology is needed, and it could be hosted either within CamTools, the University's VLE, or on sites such as Google Sites, should the academic prefer.

6	What does the CSMA/CD protocol provide? How is it similar to CSMA/CA?	Manish's Comments
Contribution 1	CSMA/CD(Carrier Sense Multiple Access/Collision Detection) protocol is used to detect data/packet collisions in data communicationS i.e. an ethernet cable in a network of 2 or more computers. <b>This protocol is only used to detect and is not used to prevent data collisions.</b> <b>CSMA/CA (Carrier Sense Multiple Access/Collision Avoidance) protocol is used to prevent data collisions in a Network. For example this protocols method could be a stop and wait system, only allowing new packets to be transmitted through a line when the line is clear.</b> Both these protocols are from layer 2 of the 7 layer model and both are used in the assistance of reducing data collisions.	Highlighted: Its possible to detect on wired networks. In wireless detection is not always possible so avoidance is used.
Contribution 2	The CSMA/CD (Carrier sense multiple access/collision detection) protocol provides a means of accurately transferring data packets across a network. This is achieved by a IEEE 802.3 and ISO 8802.3 standardized procedure that monitors network traffic across a channel between participating stations. These preconfigured rules determine how networked nodes should act in the event of a collision. A network traffic collision is the outcome when 2 or more nodes on a network attempt to transmit data packets simultaneously. If this is to happen the CSMA/CD protocol sets random interval times for each of the data packets to retransmit which then normally resolves the problem.  It is similar to CSMA/CA in the way that the protocols both aim to avoid collisions. However, CSMA/CA is attempting to avoid a problem as apposed to react when a collision occurs. What the CSMA/CA protocol does is check to see if the network channel is either idle or busy then if busy send a message to all other nodes notifying them to not transmit. Then when the	.the other 2 answers need to address second part of the question better, similarities in the two protocols need to be highlighted. This answer does that better.

*MyExamopedia, by Dr Manish Malik*

Perhaps unexpectedly, many of the more interesting uses of past exam papers I found on the web came from Cambridge itself.

### Past exam papers

Here are past papers for the Computer Science Tripos and Diploma in Computer Science from 1993 onwards.

#### Papers organised by year

[1993](#) [1994](#) [1995](#) [1996](#) [1997](#) [1998](#) [1999](#) [2000](#) [2001](#) [2002](#) [2003](#) [2004](#) [2005](#) [2006](#) [2007](#) [2008](#) [2009](#)

#### Questions sorted by topic

A number of courses have changed their name over the years. Where this has happened, we have tried to index the course to which it applies. In the question itself, the name will appear as it did at the time.

- [Additional Topics](#)
- [Advanced Algorithms](#)
- [Advanced Graphics](#)
- [Advanced Graphics and HCI](#)
- [Advanced Systems Topics](#)
- [Algebraic Manipulation](#)
- [Algorithms](#)
- [Algorithms I](#)
- [Algorithms II](#)
- [Artificial Intelligence](#)
- [Bioinformatics](#)
- [Business Studies](#)

*Exam Papers at the Computer Labs*

One of the advantages of the decentralised system of sharing past exam papers online at Cambridge is that individual Departments and academics have felt free to experiment with a range of ways of making the material available. Indeed, the first ever past papers to have been put online may have been at the University's Computer Lab: having experimented with putting the famous coffee webcam online in the early 1990s, the Department looked round for other material to put onto the web and decided that their small collection of past exam papers could find a home there. The story goes that since most of the web page was empty after the links to the entire papers had been included, the academic concerned decided to fill the rest of the page by automatically displaying individual questions from the papers organised by topic. This format is believed to be much appreciated by the students, but seems rarely to have been taken up by other Departments or Universities.<sup>1</sup>

As part of an action research by Dr Fran Tracy and Katy Johnson of CARET and the Department of Plant Sciences, exam questions grouped by topic were added to the lecture notes and glossary in the VLE.<sup>2</sup> This was following the suggestion of an experienced lecturer, who had found this useful in her own teaching. Although the researchers did not specifically include the display of exam questions as a topic in their questionnaires and focus groups, two students spontaneously commented on this, suggesting that it was found to be particularly helpful:

“Links to Short Answer Questions and Essays grouped by topic are very helpful when revising.”

“Grouping exam questions with their relevant topic is very useful, especially for exam preparation.”

<sup>1</sup> <http://www.cl.cam.ac.uk/teaching/exams/pastpapers/>, run by Dr Martyn Johnson

<sup>2</sup> Jordan, K., Tracy, F. and Johnstone, K., 'Student Interaction with a Sakai VLE in Plant Sciences', 7<sup>th</sup> Sakai Conference, 13<sup>th</sup> June 2007

<b>Molecular Tools &amp; Techniques</b>
<b>Lecture Material</b>
<a href="#">Lecture 1</a>
<a href="#">Lecture 2</a>
<a href="#">Lecture 3</a>
<b>Examination Questions &amp; Essays</b>
Past Examination <a href="#">Molecular Tools &amp; Techniques Essay Questions</a>
Past Examination <a href="#">Molecular Tools &amp; Techniques Short Answer Questions</a>
<a href="#">Practical paper questions</a>
<b>Exemplar Essays</b>
<a href="#">Question 1, 2005 1st</a>
<a href="#">Question 1, 2005 2.1</a>
<a href="#">Question 1, 2005 2.2</a>
<i>Exam Papers in the Plant Sciences Wiki</i>

Two students from the Faculty of Modern and Medieval Languages's Certificate in Humanities Computing for Languages programme have designed their own improved collections of online exam papers and questions.<sup>3</sup> One student suggested her tool “might be put to one of three uses: either, the perusal of a particular year's questions; or, the comparison of different examples of one kind of question, such as commentary; or, the pursuit of titles relevant to a named subject, say, Gide.” Again, as with the Plant Sciences research project, the students themselves stressed the need to be able to view selected questions sorted by subject or topic.

Similarly, one Maths and Economics lecturer has put together a series of detailed analyses of past exam papers, providing answers and comments on individual questions, such as 'OK though wording is confusing' or 'OK but not easy'.<sup>4</sup>

There is thus a strong tradition at Cambridge suggesting that students should be able to browse exam papers by the topic of the individual question. However, this does usually involve extra work on the part of the Department (the Computer Labs are an exception, having computerised the process), and as such is very much the exception, rather than the rule. The students' own comments on this during the focus group suggested that this was in fact generally seen by them as a useful extra, rather than a vital aid to learning and revision.

Supervisors in some subjects will be now objecting that one of the most common uses of past exam papers is to provide questions to set for supervision work. This is not a use that I have investigated, but it would seem that being either able to browse exam questions by topic, or being able to search the text of past exam papers, would be helpful in this situation.

So far, I've considered the range of forms in which exam questions are displayed in some detail. It's

<sup>3</sup> [http://www.mml.cam.ac.uk/aspects/assets/ejt1002/public\\_html/projet/accueil.html](http://www.mml.cam.ac.uk/aspects/assets/ejt1002/public_html/projet/accueil.html),  
<http://www.mml.cam.ac.uk/aspects/assets/mjf50/DATABASE/databasesstart.html>

<sup>4</sup> <http://people.pwf.cam.ac.uk/iar1/teaching/>, by Dr Ian Rudy

now time to turn to the context in which exam papers and questions are displayed. Across the University, it is clear that exam papers are almost always shown in a specific context.

The Faculty of English places its exam papers in the context of assessment more generally. All past papers are displayed in a section of the site together with Examiners' Reports, the Marking and Classing Guidelines for examiners, a version written specifically for students, guidance on writing Dissertations and Portfolios, Regulations for exams, and official 'Information for Candidates'. Reading Lists, in many ways the closest that the Faculty seems to come to a syllabus for students, are also made available here. Students are thus supported in understanding the criteria against which they are assessed.



*Exam Papers at the Faculty of English*

The Department of French includes the most recent past exam paper for a course within the description of the course itself, together with the reading list, rather than storing all past exam papers together on one web page. Thus, the past paper is shown in a context which suggests that the exam paper forms part of the integral study of the subject from the beginning.

Colleges, meanwhile, frequently offer guidance for their students on how to prepare for exams, including some suggestions on how to use past papers in that preparation.<sup>5</sup> Although one or two Departments also do this, I have not seen suggestions on how to use past papers in revision given together with the past papers themselves at Cambridge University. CUSU and the Counselling Service also offer advice on revision techniques on their websites, but these are not necessarily locations where students would think of looking for advice, and the information is not placed in a context where students are likely to come across it at the appropriate time.<sup>6</sup>

<sup>5</sup> For example, <http://www.corpus.cam.ac.uk/undergraduates/current-students/651>. Some Departments also do this, e.g. [http://www.phy.cam.ac.uk/teaching/exam\\_skills.php](http://www.phy.cam.ac.uk/teaching/exam_skills.php) from the Dept of Physics

<sup>6</sup> <http://www.counselling.cam.ac.uk/exams.html> from the Counselling Service, <http://www.cusu.cam.ac.uk/academic/exams/revisiontips.html> from CUSU

During the focus group with students, it became clear that having clear and easy access to information on the course as a whole, information about the means of assessment for the course, and guidance on how best to prepare for assessment, was seen by them as being considerably more important than the way in which the exam papers or questions themselves were displayed.

## **Current practice in making exam papers available in Libraries**

At the moment, large volumes containing corrected versions of the overwhelming majority of the year's exam papers are sold by the Board of Examinations to the college libraries, at a cost of approximately £130. The material takes up approximately 6 large volumes each year. These volumes are heavy, and take up a considerable amount of shelf space. It appears that all the colleges subscribe to these volumes, with some buying multiple copies. No official studies have been done of how much usage these volumes get: librarians say that it is very much dependent on the time of year. The fact that many exam papers are also available online from the Departments has almost certainly reduced the amount of usage these papers get. However, some librarians still felt that exam papers proved a major draw to the college library for students. A diagram showing the workflow for the creation of these printed archives of exam papers is available in Appendix 1.

Certain courses, which make use of Multiple Choice Questions that are re-used periodically, appear to have dispensation not to submit material for these official volumes. Other courses that use Multiple Choice Questions submit them to these volumes, but do not put them online. Ironically, perhaps, at least some of the Departments do not see material available in libraries as being easy to access, and thus they are happy for exam papers to be printed that they would not wish to see online.<sup>7</sup> This may account for some of the photocopying of printed papers that is reported to take place in college libraries.

The majority of the Departmental libraries also hold paper copies of past papers, although there is an increasing tendency to refer those asking for them to the website or to CamTools, the University VLE. The quality, format and access restrictions of these paper copies varies wildly, from badly copied photocopies (including some almost unusable images) available from the front desk, to professionally bound copies on the open shelves. Those Faculties whose papers have multi-media requirements, such as Music and History of Art, make these available separately, with materials including CDs and large high-quality images.

## **Responses from Libraries and Departments to the Proposal**

A major selling point of the original proposal was the benefits to Cambridge's libraries: it was suggested that the bound volumes were both expensive and took up a good deal of space. All the college, Faculty and Departmental libraries were given brief details of the proposal, and asked to comment.

College librarians were generally positive about the proposal, although there were a number of caveats. (A detailed description of responses is given in Appendix 2.) Approximately two-thirds felt they would no longer subscribe to print versions of the exam paper archives should a reliable, user-friendly and equally comprehensive online archive be available. Some queries were raised about the

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<sup>7</sup> e.g. PDN

ability of the project to achieve this, however, with worries as to whether Departments would be resistant. The savings of both money and shelf space were thought to be helpful, especially to smaller or less well-resources libraries. Several commented on the hard work of repeatedly re-shelving heavy volumes, and others commented that the current system occasionally resulted in volumes 'walking', more or less permanently! One librarian felt that printed exam papers played an important role in encouraging students into the college library, and around one-third felt that they would continue to buy the printed volumes. General comments, however, were positive, if the resource were done well.

Faculty and departmental librarians were more variable in their responses. In general, they felt that the idea of online exam papers was highly beneficial to students, but just over half commented that the materials were already available online. As a result, they expressed concerns over the potential duplication of effort and amount of time that might be involved. Eight of the 14 libraries would 'probably' or 'definitely' continue to make paper versions available. Four would 'probably' or 'definitely' stop making paper versions available, and one no longer makes paper versions available.

A couple of libraries raised issues around how the materials would be found by students, with this comment summing up the general views well: "Having exam papers held in DSpace as well as on CamTools means yet another place for students (and staff) to look to find course resources. Students rarely want to consult exam papers that are more than a few years old, because of course content and syllabus changes. Therefore, the most useful place for recent exam papers is with other course material. As a resource for researchers and as a means of preserving exam papers it would be useful."

I made a determined effort to contact those responsible for undergraduate teaching in every Department to inform them about the proposal and to ask for their comments on the proposal. Getting names and contact details was a slow and wearisome process, and some Departments remained uncontacted. Only 11 Departments responded to the survey: in comparison to results from the Departmental librarians, I got the impression that the Departments who either had extremely successful systems or who had no system at all had been more likely to reply.

All the respondents agreed that having exam papers online was valuable for students, but there were disagreements as to whether a central exam paper repository would be useful, or whether Departments could organise more appropriate provision independently. Two respondents commented that organising the provision of past papers online could be difficult for Departments, and that for these Departments, this might be a useful facility. The general feeling of those who already had a system in place seemed to be summed up in the following comment:

"We already have an online facility offering both exam paper and cribs. What we make available is primarily decided by our Directors of Studies Committee. (Paper copies of all our exam papers and cribs are available in our Departmental Library, but this is thought to be a separate issue because the ease of access is so much less.) There would not be a great benefit in a central exam paper archive as we would have to keep our Departmental facility in order (a) to control access as required by our Directors of Studies and (b) to handle the cribs."

Particular concerns included students seeing outdated material, and students having access to a huge bank of questions which, due to the nature of the subject, are likely to be repeated from time to time, which would encourage rote learning. A number of respondents noted that students should be able to see exams other than those they were registered for in CamSIS, in order to choose papers for the future.

The Department of History and Philosophy of science asked it to be noted that "More generally, we are concerned that the University is strategic in its allocation of funding for digitization projects and the development of information resources." (In my reply, I explained that the project had been

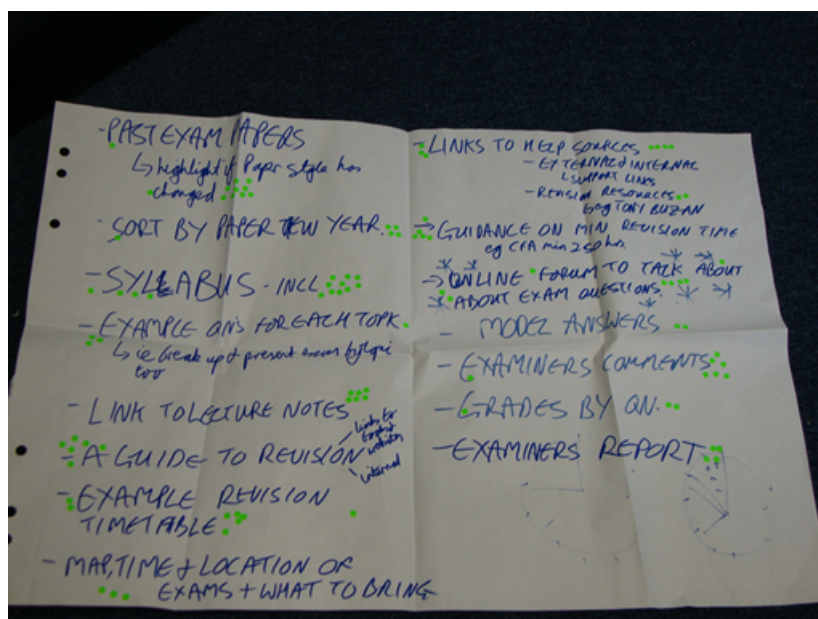


funded by the Arcadia Programme as a test case for the provision of personalised library services.) They felt that CamTools provided a good service for putting exam papers online already, and that more was unnecessary.

10 out of the 11 Departments felt that, should there be they would want the central exam paper browser to appear within their own Departments web pages, with 7 agreeing that they would also want it to appear within CamTools course sites.

## Responses from Students

Having contacted librarians and those responsible for teaching across the University, it was more than time for students to have their voice. At a two-hour focus group, students were invited to think about their own revision practice, introduced to the range of ways in which exam papers and questions were made available at Cambridge and beyond, and then asked to work together to decide what they thought would be most useful in a web tool containing exam papers. Having seen a range of existing materials and ideas, students worked in small groups to agree the features, navigation, etc of their ideal exam paper tool. The students were then invited to vote for the features they felt most important by sticking green dots beside them.



*One group's requirements from the student Focus Group*

The students were original and enthusiastic in their ideas on how to design an improved exam paper delivery system, and the designs very swiftly moved to putting exam papers at the heart of a set of information about the course, the assessment of the course, and how best to prepare for the assessment. One issue that to me had seemed valuable, whether Departments should be encouraged to make questions available individually, organised by topic, was seen by the students as being comparatively unimportant, although some of their more requests implied that this should be the case. Instead, the students emphasised the importance of making available a description of the syllabus, previous Examiners' Reports, information on how to revise, and materials that would clarify the class boundaries. Students discussed the balance between encouraging rote learning and making the assessment clear, and agreed that, for example, plans for answers to essay questions that would be allocated various different grades would be useful. Much of this material is already



available, and the difference that the students imagined it brought together into one place. The students also discussed the potential for exam paper software that made some use of social networking or wiki tools, as they had seen with MyExamopedia. They liked the suggestion of students sharing sample answers for individual exam questions, with discussion forums attached. One more unexpected request was that it should be possible to tick off questions as you answered them - apparently forgetting which past questions you have already attempted is a comparatively widespread problem!

Many of the students' suggestions were not feasible to undertake with the time available, but as far as possible their input was used to shape the tool and the ways it can be integrated into existing web pages. A full list of the students' requirements is given in Appendix 4.

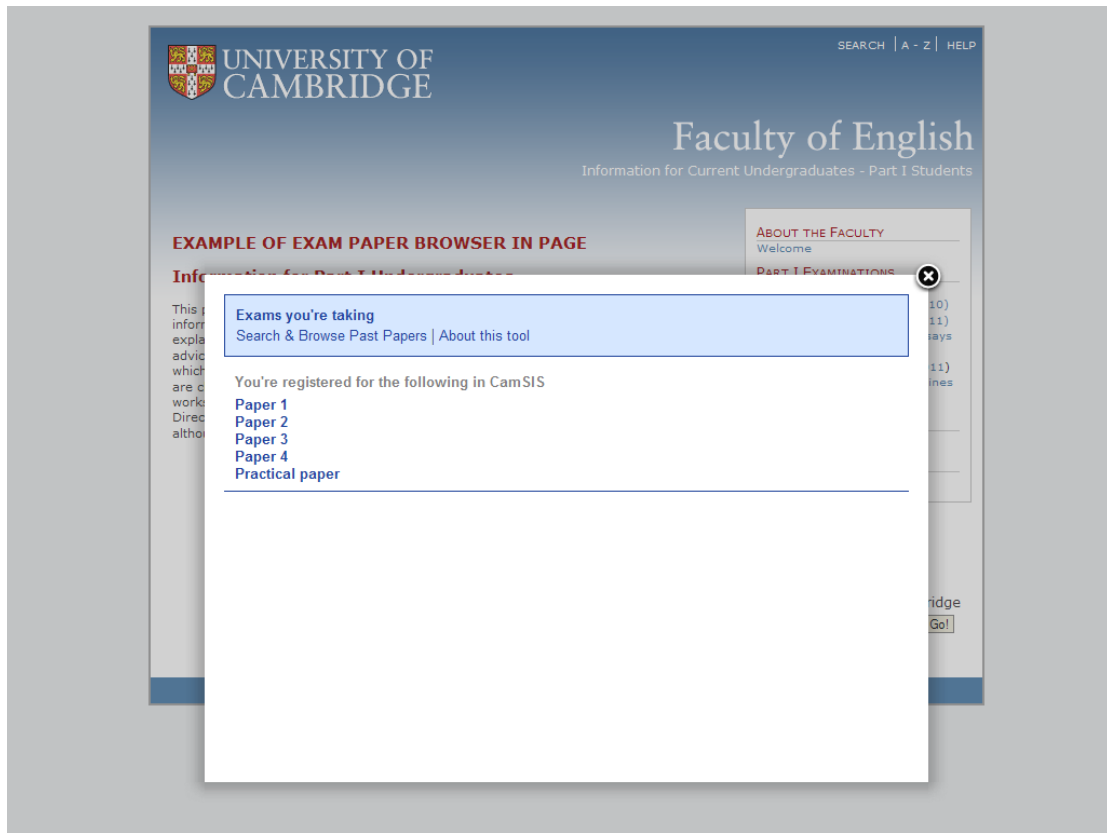
## The Design of the Tool

It was clear that Faculties and Departments would want the exam paper browser to be available from their own web pages. This also seemed to be the easiest way to make sure that it was near the material that the students valued, such as course descriptions, lecture handouts, class guides, and the like. Looking over the ways in which the departments currently make exams available to students, it was clear that although there was some really excellent resources available, other Departments were struggling. By including the browser within existing web pages, I hoped that those Departments who were providing very little or no provision of exam papers online would be supported, while those who already made a range of specialised additional material available with their exam papers could continue to do so.

The following image shows the exam paper browser as it could be incorporated into the Faculty of English's web page, one that the students seemed to particularly appreciate. In order to see the exam paper browser, the student clicks 'View Exam Papers', in the right-hand menu.



Once the student has logged into Raven, the exam paper browser is displayed, and the exam papers that the student is registered for in CamSIS are automatically displayed. (Note that this functionality is awaiting further liaison with MISD, owners of CamSIS)



Alternatively, the student can browse through all the courses available within the University.



When the student has selected a Tripos and Part, the relevant papers available within that Part are displayed. Clicking on the title of a paper will show links to the past papers stored in DSpace, ready for the student to read and download.



DSpace automatically indexes the text of PDFs, so exam papers stored in the system are potentially fully searchable. For example, searching for 'arabidopsis' brings up all exam papers with a question on this topic. This was a feature requested by the students during the focus group, and may also be of use to supervisors wishing to set essay questions.

Additional materials such as audio files, cribs, images and so on can easily be included in DSpace, tagged with the appropriate exam code and date, and will then be displayed alongside the exam papers themselves. Notes on the papers and other items can also be included, and if so, will be displayed in the exam browser.

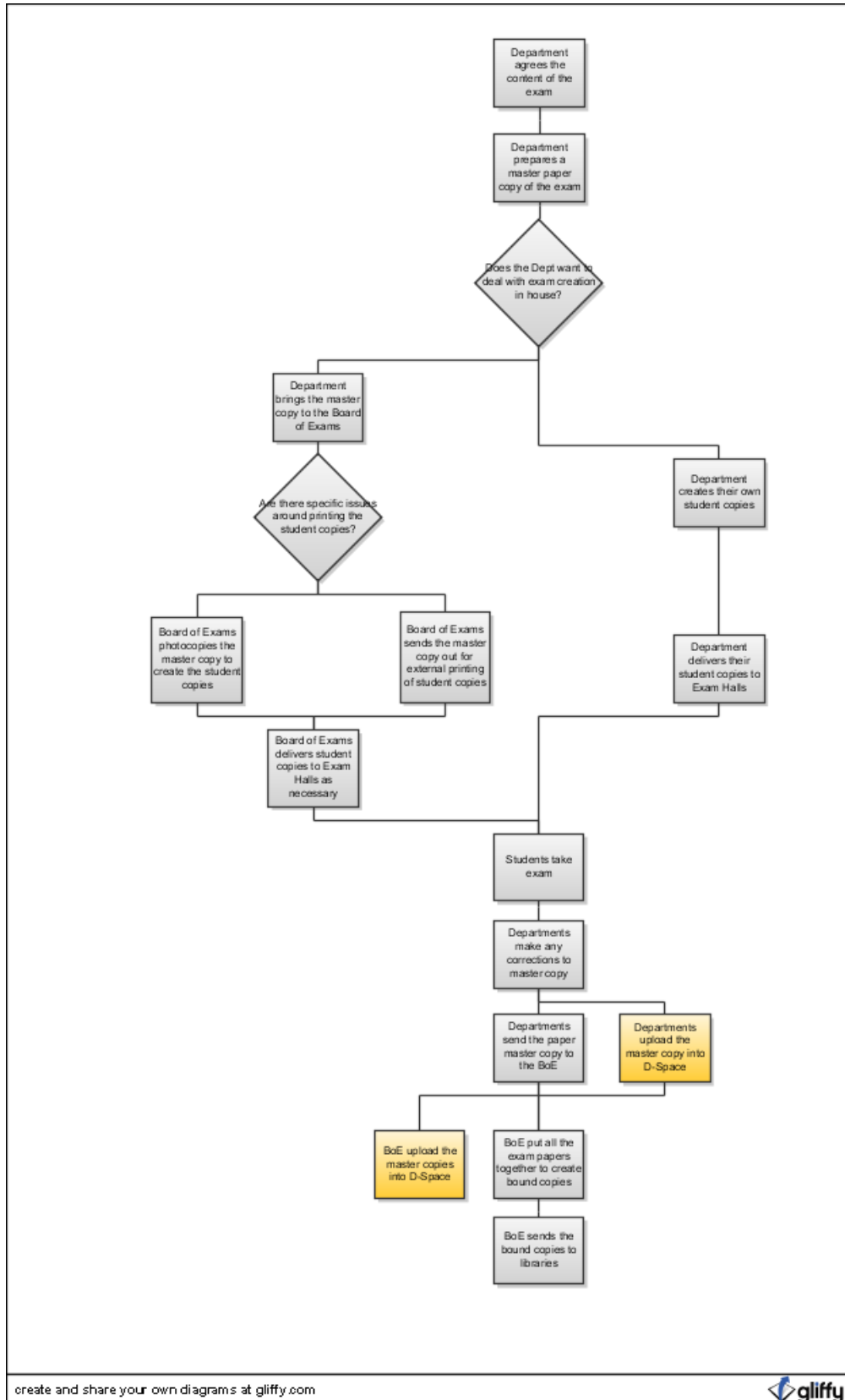
## **Further developments**

There are still a number of technical improvements to the tool necessary before it can be launched. These include improving the search functionality, ensuring that materials are displayed in reverse date order, dealing with papers whose exam code has changed, creating an XML document with the complete structure of the University and all exams, testing for bugs and security loopholes, and optimising for speed. In addition to this, the past papers themselves need to be entered into DSpace, which is awaiting the approval of the Education Section.

At the moment, adding materials into the repository can be done either through the standard DSpace web interface (for individual resources), or by creating a CSV file for uploading by the DSpace team (for multiple resources). It would simplify the process of submission if senior examiners could use a customised web tool to submit exam papers. Ideally, this would recognise the examiners' Raven ID and automatically give each paper the correct CamSIS subject and exam codes. However, this is a project that will have to await further development.

# Appendix 1: Workflow showing the creation of the printed archives of exam papers

Boxes in yellow show potential for material to be uploaded to DSpace





## Appendix 2: Survey of College Libraries

15 of the 17 college libraries could see definite potential benefits to themselves directly. One felt that the benefits would be marginal, and another stressed the caveat that the system would need to be genuinely user friendly to be of use.

8 libraries explicitly mentioned that there would be benefits in terms of making more shelf-space available, for example saying that 'it would release space that we desperately need for other things'. Again, one library felt that "with dwindling print journal subscriptions the pressure on space of six volumes a year is hardly significant"

6 libraries explicitly mentioned that there would be cost savings. However, one felt that "£130 is not a huge saving" while another felt they "would gladly use the £130 spent annually on papers to another purpose"

3 libraries commented it would cut down on the requirement to re-shelve heavy items.

2 libraries felt it would stop exam papers 'walking' or getting lost.

Three of the libraries felt this might prove a more reliable system than the current one:

"it might ... save staff time tracking down obscure papers (eg medical retakes) which are not always included in the bound volumes, or which have not yet been published at the time the students need them."

"Saves doing amendments, removals and chasing missing papers."

"having a complete collection - we are missing a complete year from the early 2000s!"

11 of the 17 colleges saw no potential disadvantages at this point. Those who did have concerns mentioned the possibility of copyright problems, issues of accessibility, and concerns as to whether all the Departments would indeed take part: "Operating two systems to accommodate departments resistant to online access would be very undesirable.". "These are the types of resource that get people into the Library, so yes I think it would be yet another thing that encouraged bypassing the College Library, and downgraded its role. Reduced revenue from photocopying as well." One library also mentioned a concern that if the electronic system were to fail, the paper versions provide a useful backup.

All 17 libraries felt there would be benefits to the students. (Note that none mentioned that there were currently past exam papers available online.) These included having constant access to all the resources, including when the library is closed, they are not in Cambridge, and when other library users are using the volume.

4 commented on the value of not having to wrestle with the heavy volumes! A number felt that it would be preferable for students to print out papers rather than photocopying them.

Concerns for the students included that not all the Multiple Choice Questions are published. One suggested that it would be harder for students to compare different years on screen.

11 of the 17 libraries felt they would 'probably' or 'definitely' stop subscribing to paper copies if a full digital version was available online. 6 felt they 'probably' or 'definitely' would continue to subscribe.

In general, the final comments were extremely supportive:

- I think this would be very useful, particularly as the paper copies are very heavy, difficult to handle and to photocopy.
- excellent idea
- Sounds a great idea!

- Just a note from another angle to support this further. I showed your proposal to the Senior Tutor and asked for her thoughts from a teaching point of view, and she thought this was an excellent idea. She also pointed out how beneficial it would be to examiners to be able to quickly look up questions that had been asked in previous years.
- As I mentioned above, access to some papers eg the medical retakes can be problematic, because either they are not included in the bound volumes or because students need the papers before the bound volumes are produced.
- I think, increasingly, this will be something that students expect to have access to online. I expect academic teaching staff will have a view too - would be interested to know what they think.
- Many past papers are available on the departmental/faculty web sites, do you think they would they continue to be so?
- The use of copyright material in exam papers may make some papers problematic to archive and subsequently make available. It may be difficult to put together a fully comprehensive set of papers each year and once the collection is seen as "gappy" students may be frustrated in using it. Top quality search tools essential. Will you also be consulting Department and Faculty Librarians?
- Excellent idea - good luck.
- Because of space constraints we only keep the last 6 years of exam papers. For any exam papers before 6 years ago, students have to go to their faculty library. Online access would give students access to many more exam papers than we currently hold in hard copy.

## **Appendix 3: Requirements from student focus group**

10 students took part, ranging from a 1<sup>st</sup> year undergraduate to a mature student studying from an MPhil. There was a range of Tripos subjects, including Music, Land Economy, Plant Sciences, Economics, Archaeology, Chinese and English. As a result of one student's last minute illness, only one Natural Scientist attended, and we had an extra Humanities student instead. One of the students was an elected Student Representative for her Faculty who had previously taken part in Faculty discussions around providing exam revision material.

### **Organisation of resources**

- Organise it by Tripos, then by paper, then by year, by default
- Alternative to browse by Tripos and year
- Indicate whether the style of the paper has changed since this paper took place (+10)
- Make it clear that this is the corrected version of the exam paper (+9)
- Make questions available individually, for additional material and comments to be attached to them, and for them to be ticked off (individual questions were not explicitly seen as useful, but were implied by other requests)
- Print version of the papers, taking up as little paper as possible (+8)
- Audio materials available where suitable (+5)
- Ability to tick off questions one by one as they are studied (+6)
- Interactive, personalised site on CamTools (+4)
- Questions can be gathered separately, and can be organised by topic if Depts so choose

### **Features**

- Fully searchable

### **Additional materials that should be available with the exam papers**

- Include a link to the syllabus for the course (+14)
- Examples of essay plans that would be given various different classes (+8)
- Link to examiners' reports (+7)
- Link to useful revision resources (+6)
- Example revision timetable (+8)
- Link to lecture notes (+6)
- Links to information about paper based resources in libraries, e.g. dissertations (+5)
- Links to mark schemes for the papers (+3)
- Notes from lecturers / supervisors on individual questions, e.g. whether they are recommended for revision or not

### **Social networking aspects**

- Ability for students to leave comments on individual questions (+9)
- Discussion forum organised by Tripos and paper for students to discuss exam questions and preparation (+8)