



Project Document Cover Sheet

Project Information			
Project Acronym	eBiolabs		
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Lead Institution	University of Bristol		
Project Director	Dr Gus Cameron		
Project Manager & contact details	Dr Gus Cameron, School of Medical Sciences, University of Bristol, Bristol, BS8 1TD		
Partner Institutions			
Project Web URL	www.bristol.ac.uk/eBiolabs		
Programme Name (and number)	<i>Transforming curriculum delivery through technology 08/08</i>		
Programme Manager	Lisa Gray		

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Document History		
Version	Date	Comments

Interim Reporting Template

Project Name	<i>eBiolabs - University of Bristol</i>
Report compiled by	<i>Dr Gus Cameron</i>
With contributions from	<i>Dr Paul Wyatt, Dr Kelly Moule, Suzi Wells</i>
Reporting period	Project start - August 2009

Section One: Summary

As I write eBiolabs is rapidly approaching “E-Day”, the day that we go live to 250 life science students. The project is without doubt the biggest and most important teaching-related venture instigated at the University of Bristol in the past five years and has captured the interest of departments and faculties representing over half the total undergraduate population. In some cases this interest has been at the level of “interesting, but we don’t have the resources to follow it up at the moment” but in others it has been “we are diverting the resources from other projects so we can expand eBiolabs into our academic area right away”. The fact that this level of interest *and* commitment has been shown before eBiolabs has gone live is testament to the power and timeliness of its vision.

Our key work to date has consisted of defining the nature and extent of the problem of teaching and learning practical bioscience and using that information to help us build a new educational delivery system using the most appropriate technology. In parallel with this effort we have been working with academics and subject experts to identify and transfer content into the new wrapper. We have grappled with the issue of reducing the administrative and marking burden while simultaneously improving the quality and quality of feedback received by the students and have arrived at two alternative solutions both of which we will be testing in the next academic year.

Although the major portion of our dissemination efforts have not yet taken place, interest has already come from outside the host Institution, notably from the newly-formed Office for Life Science under the leadership of Lords Mandleson and Drayson. The Office has a remit to build a more integrated life sciences industry in the UK and part of that means improving the UK skills landscape. eBiolabs was invited to be part of a high-level advisory group influencing OLS policy and subsequently hosted a visit from an OLS representative who was shown the project and what it was hoping to achieve. We are confident that eBiolabs will become an exemplar of good practice for teaching lab and workshop based subjects.

Section Two: Activities and Progress

As no notable changes have been made that impact on the project plan what follows is an update of progress to date, with an emphasis on aspects that we believe are particularly worthy of mention here. We have expended considerable resource on establishing a baseline of the nature and extent of student engagement and achievement in practical bioscience. Activities have included focus groups with postgraduate demonstrators, focus groups with undergraduates, focus groups with staff, one-on-one interviews with academic staff and technicians. We have also sampled students’ views using paper surveys. This process is now complete and the results are attached but we must ask that they be kept confidential within JISC project staff as the information they contain is sensitive.



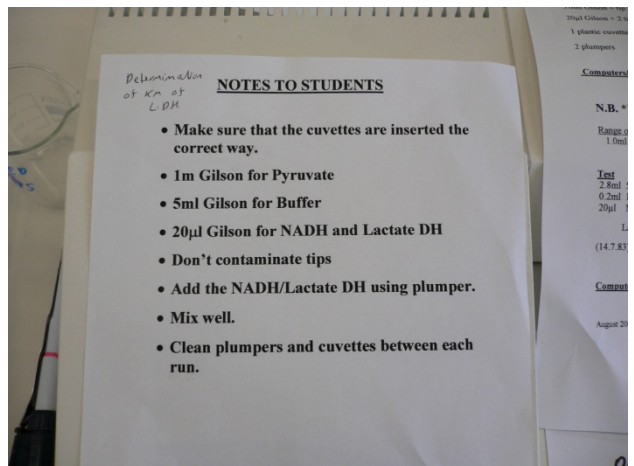
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Observing undergraduates and postgraduate instructors in the teaching labs.



Assisting academic staff to capture current practice



NOTES TO STUDENTS

- Make sure that the cuvettes are inserted the correct way.
- 1m Gilson for Pyruvate
- 5ml Gilson for Buffer
- 20 μ l Gilson for NADH and Lactate DH
- Don't contaminate tips
- Add the NADH/Lactate DH using plumper.
- Mix well.
- Clean plumpers and cuvettes between each run.

A typical experimental setup and one way that information is currently delivered to students

The screenshot shows the eBioLabs website interface. At the top, it says "You are logged in as **gas_camer** on. Student (Return to my normal role)". The main header features the eBioLabs logo and the text "Integrated tools for laboratory teaching". Below this, there's a navigation bar with "eBioLabs > 1G Labs" and "Return to my normal role".

The main content area is titled "Biochemistry 1G Practicals" and includes a "News and announcements" section. The first announcement is dated "4 October - 10 October" and is titled "pH AND BUFFERS". It describes an experiment involving a pH meter and the Henderson-Hasselbalch equation. The second announcement is dated "18 October - 24 October" and is titled "USE OF THE SPECTROPHOTOMETER". It describes an experiment using a spectrophotometer to determine the concentration of a solution of ethanol and the absorbance of various known concentrations of haemoglobin.

On the left side, there are three green buttons: "Important Concepts", "How to Use Excel", and "My grades". On the right side, there are two green boxes: "Attendance" (stating "Attendance has not started yet for this course") and "Administration" (with links for "Grades" and "Profile").

A prototype of the eBioLabs VLE

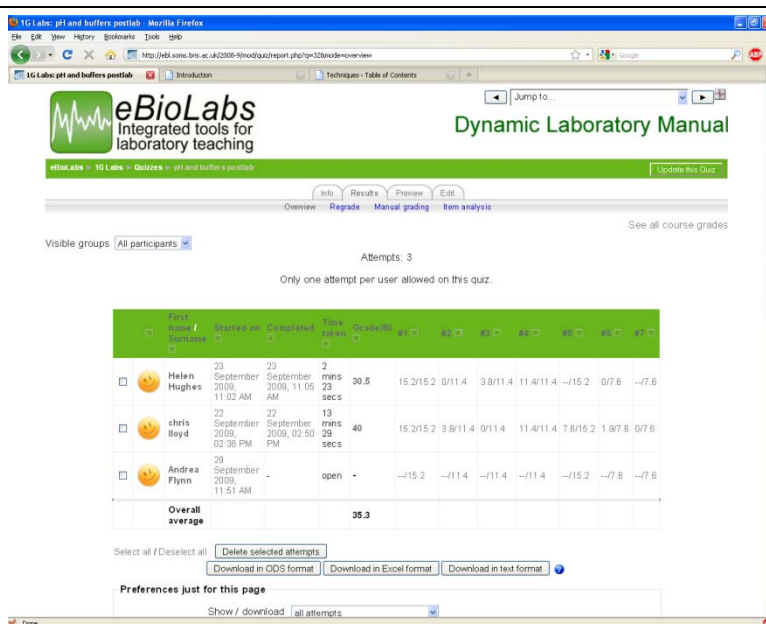
The screenshot shows a web browser window displaying an interactive module titled "Using the spectrophotometer". The browser's address bar shows the URL: "http://tbl.sims.brs.ac.uk/2009-9/fe_ph712/spectrophotometry/vlelab/page_04.htm".

The page content includes a "Table of Contents" on the left, listing sections A through C. The main content area is titled "Using the spectrophotometer" and contains text explaining the instrument's use. It features an interactive diagram of a spectrophotometer with labels for various components: "On/off switch", "Display", "Up and down buttons", "Readout button", "Cuvette holder", and "Zero button".

Below the diagram, there is a "Useful information" section with a "Take reading" button. To the right, there is a "Select the appropriate options from the selection below then click 'Take reading'" section, which includes dropdown menus for "Solution" (Empty, Buffer, NADH solution), "Amount of solution", "Cuvette orientation", and "Lid position" (Open, Closed).

A screenshot showing some of the interactive content that has been developed to populate the eBioLabs system and support the delivery of laboratory-based bioscience

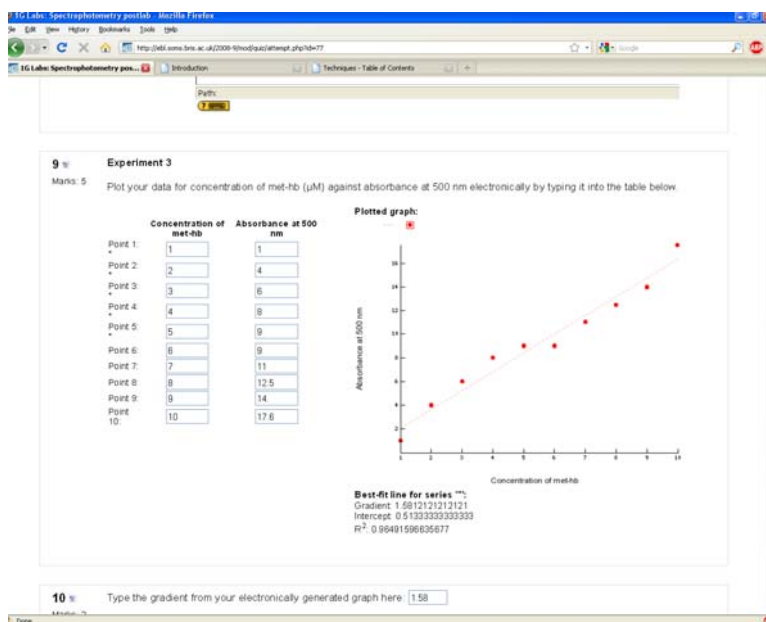
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The screenshot shows the eBioLabs interface for a quiz titled "1G Labs: pH and buffers postlab". The interface includes a navigation menu with options like "Overview", "Regrade", "Manual grading", and "Item analysis". Below the navigation, there is a table of student performance. The table has columns for "First name / Surname", "Started on", "Completed", "Time taken", "Grade/100", and several individual question scores. The overall average score is 35.3.

First name / Surname	Started on	Completed	Time taken	Grade/100	Q1	Q2	Q3	Q4	Q5	Q6	
Helen Hughes	21 September 2009, 11:02 AM	29 September 2009, 11:05 AM	2 mins 29 secs	30.5	15.2/15.2	0/11.4	3.8/11.4	11.4/11.4	-/15.2	0/7.6	-/7.6
chris Boyd	22 September 2009, 02:36 PM	22 September 2009, 02:50 PM	13 mins 29 secs	40	15.2/15.2	3.8/11.4	0/11.4	11.4/11.4	7.6/15.2	1.9/7.6	0/7.6
Andrea Flynn	29 September 2009, 11:51 AM	-	open	-	-/15.2	-/11.4	-/11.4	-/11.4	-/15.2	-/7.6	-/7.6
Overall average				35.3							

One view of the gradebook developed specifically for assessing laboratory-based work.



A view of a new question type that allows input of laboratory data within Moodle

Much of our work has been done in collaboration with academics, post-graduate instructors, technicians and senior managers. We have helped these groups to look at the way undergraduate laboratory-based teaching is currently delivered and develop alternatives that offer significant improvements to stakeholders and that fit within our project remit. A part of our effort that deserves special mention is the development of more efficient systems to administer the submission and return of the 20,000 pieces of laboratory coursework generated each year. The challenge here has been to find a system that can cope not just with the subject-specific coursework that we will be dealing with in our first live year but also with the work produced in all types of laboratories across the breadth of the biosciences. In the next academic year eBioLabs will be trialling two mutually compatible systems. The first relies on submission of work via custom written pages within the Moodle-based eBioLabs VLE while the second uses eBioLabs as a system to deliver and return student-generated documents. The advantage of the former system is that it is administratively the system which will require the minimum of training, is the simplest and consequently the most robust.

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The main disadvantage is a lack of flexibility that means some bespoke programming (in PHP) is required to cope with different types of coursework. The latter system, the upload and return of student-generated documents, has the disadvantage of being administratively more complex along with the worrying potential for user error leading to document loss. There is also the question of the type of document that should be uploaded by the student; can we find one type that will suit all types of laboratory coursework or will we have to cope with documents generated by different applications on a regular basis? On the simplest level this latter scenario would not cause technical problems but if we wanted to streamline and partially automate the marking and feedback systems using a multitude of different document types could become a major spoke in our administrative wheel. After consultation and experimentation we have adopted Microsoft Excel as an application that a) can be adapted by scientists from many different academic disciplines to fit the vast majority of laboratory classes, b) is already in common use by instructors, students, industry and academia and c) readily allows for automated and semi-automated marking of student work.

We have produced example Excel templates and marking macros for evaluation by academics, students and instructors that we believe are worth trialling within eBiolabs. An advantage of these is that they come with a deal of pedagogical flexibility. For example during the early stages of a course students can be guided through the coursework, be given many hints and have graphs drawn and analysed automatically using standard Excel functions. At later stages of the course the amount of guidance and assistance given to students within the Excel template can be minimised in order to increase the challenge. As well as including functionality within the template that guides the learning process, we will be testing marking and feedback using automated macros: marks and feedback are automatically assigned based on student-generated numerical data or are semi-automatically assigned where subjective data has to be assessed - for example the human marker selects marks and feedback from pre-programmed drop-down lists. A typical student template is shown in Figure 1. During the next academic year we will investigate the advantages and disadvantages of these two contrasting systems and disseminate our findings to the community through the appropriate media.

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The screenshot shows an Excel spreadsheet with the following content:

- Header:** eBioLabs Integrated tools for laboratory teaching. Title: Protein Synthesis.
- Student Information:** Enter your name here: Jane Doe; Your partners name: Joe Bloggs.
- Question 1:** The concentration of ^{14}C -glycine you used was $0.74 \text{ MBq}\cdot\text{mL}^{-1}$ and its specific activity was $2 \text{ GBq}\cdot\text{mmol}^{-1}$ ($2 \times 10^9 \text{ dps}\cdot\text{mmol}^{-1}$). How much ^{14}C -glycine did you add to each microfuge tube? (3 marks). Show your working in this column. Give your final answer in this column. Units: MBq, dps, μmol .
- Question 2:** Using the cps value for your Standard vial, calculate the efficiency of the scintillation counter (2 marks). Show your working in this column. Give your final answer in this column. Units: %.
- Question 3:** From your answers to 1 and 2, calculate a conversion factor which will convert the cps value into $\mu\text{mol } ^{14}\text{C}$ -glycine taken up by the bacterial. (2 marks). Show your working in this column. Give your final answer in this column.
- Question 4:** Complete this table (12 marks).

Tube No	cpm obtained	cps obtained	cps incorporated	μmol glycine incorporated	% of glycine incorporated

Figure 1. An example Excel-based template designed to be uploaded by students into eBioLabs and assessed using a combination of human input and automated macros.

Section Three: Outputs and Deliverables

What outputs are you expecting to arise from the project? Specify the audiences your expected outputs will be for. (Note: you should have received a mapping tool to help you specify these). This should include a short paragraph summarizing expected technical outputs/system integrations etc.

What outputs, if any, have you produced in this reporting period? Include any outputs, including interim and work in progress, that you have shared with other projects e.g. via the Circle site or workshops. Are there any other outputs you would like to share at this time? Please describe, provide URLs or attached documents etc

Our outputs and deliverables are detailed in our project plan. The timing of this report is such that it is not possible to properly evaluate our work as it has not been tested in the heat of the undergraduate laboratory. In this reporting period our work has concentrated on baselining, creative and preparative activities. Many outputs and deliverables have been created (see above for

examples) and are being deployed and evaluated this academic year. Our findings will be based on delivery of a full first-year course of laboratory practicals via eBiolabs to the 2009-2010 cohort of 250 bioscience students. Because of our baselining and evaluation activities we will be able to contrast the experience of eBiolabs students with last years' cohort and with 2009-2010 students on bioscience courses who are not using eBiolabs.

Although most of our outputs are yet to come, we believe that we have already had an impact on the community through our communication and dissemination activities (see below). At this point in time we are more confident than ever that our work will have a great impact and that the lessons we are learning, along with the solutions we are developing, will help to shape the future of laboratory and workshop-based teaching and learning.

Section Four: Outcomes and Lessons Learned

Laboratory science relies on implicit knowledge - knowledge that cannot easily be transferred by written or verbal means - so it's no surprise to find that most scientists say that they learnt science at the bench, effectively serving an apprenticeship. Scientists say that practical science, much of which involves the development of manual and technical skills, cannot be taught without giving the student the opportunity to practise. Unfortunately, delivering a laboratory-based curriculum to undergraduates occupies large amounts of time, space and equipment, is challenging to assess and the skills acquired are not always apparent to the learner.

Although all academic staff we talked to believed strongly that the acquisition of practical skills is an essential part of the undergraduate degree, there is a certain amount of cynicism surrounding the time spent in the first-year teaching laboratory. These academics are effectively saying that unless students can be offered intensive one-to-one tuition (as happens in the final year of most undergraduate degrees) laboratory skills cannot be meaningfully taught or learned. Our findings suggest that a large part of this unrealistic attitude originates from systems where the students achieve little, partially because of a lack of preparation and partly because of low expectations. In addition most assessment regimes are based entirely on the post-session submission of written pro formas rather than on contemporaneous assessment of the skills and knowledge acquired at the bench. If the proportion of end-of-year marks belonging to an element of assessment is a measure of the confidence in which that element is held then laboratory-based work performs poorly in the first years of most undergraduate degrees. As well as this, or perhaps because of this, teaching laboratory-based sessions has a lower status among academics than lecturing and it is hard to find champions for laboratory teaching at the practitioner level due to the lack of stringency that is associated with assessment; at the academic management level teaching laboratories are more typically associated with high costs than high achievement.

Students currently receive little feedback about their laboratory work and, judging by the numbers who fail to collect their marked work, many attach little value to the feedback that is provided. At most research-intensive universities practical work is marked by post-graduate students who typically find the work repetitive, tedious and intellectually unrewarding. After post-grads have marked the first 50 scripts they report a loss of motivation and a lack of any inclination to give more than the bare minimum of feedback. Our work has confirmed that much of the marking effort is currently expended on activities that could be automated so a priority of eBiolabs is to see if the introduction of automated marking leads to student's receiving more higher-level feedback and if that will be more valued by learners.

A fundamental change to the curriculum delivery that eBiolabs will be instigating is the focus of student effort. We have found that at present students typically spend less than 20 minutes

preparing for laboratory sessions. The reasons for this are multifarious but fundamentally, students do not prepare because they do not see the need: there are no strategically important penalties imposed on the student who arrives for a session having failed to prepare. We have anecdotal reports from academics who consider students to be more strategic in their learning than ever before - students value an activity precisely according to the associated number of summative marks. As laboratory-based learning is difficult to assess few summative marks are awarded and students give it a correspondingly low value. Although the best answer to this problem would be to radically increase the student:staff ratio in laboratories this is impractical in the current financial climate and we have been forced to look to other solutions. The recent increase in the availability of high-bandwidth online access coupled with the ability to easily generate and deliver multimedia content and training solutions has given us the opportunity to deliver material and track student engagement prior to the face-to-face session.

Our overall approach is to reduce the quantity of work associated with the post-laboratory assessment in favour of increasing the amount of preparatory work required (see Figure 2). We will require students to engage with preparatory material in advance of the learning session via the eBiolabs VLE and we will attempt to enforce compliance by instituting online pre-laboratory tests, the results of which will be available to instructors in advance of the session. We will attempt to minimise plagiarism using question-banking techniques within the VLE and will be assessing the effectiveness of this process using the methods described in our project plan. Our findings suggest that the 20-40 minute introductory talk currently delivered to students at the start of practical sessions serves to reinforce the opinion prevalent among learners that they do not need to prepare as it will all be explained to them. As we have found that the majority of instructor time is taken up answering questions that were covered in the introductory talk we believe that these talks are not achieving their learning aims and outcomes. In order to break this pattern academics will be asked to restrict the material delivered at the beginning of the laboratory session to the minimum required for safety and logistical reasons.

At present all the background information for a session is held within a printed laboratory guide that students bring with them into the laboratory, which disincentivises students from learning the material in advance. In the future the full material will be available on-line in a few select locations in the laboratory. We have had to struggle with how much information to provide in the printed guides (they will need at least the basic laboratory instructions and somewhere to record their raw data) and will be reporting back on our findings as to the best balance. As far as is possible we want to assess students in-lab but this is complicated by the high staff:student ratio and the diversity of post-graduate instructors. All students have to get their printed lab books signed off at the end of the session and we are currently exploring how we can extend this into full in-lab assessment.

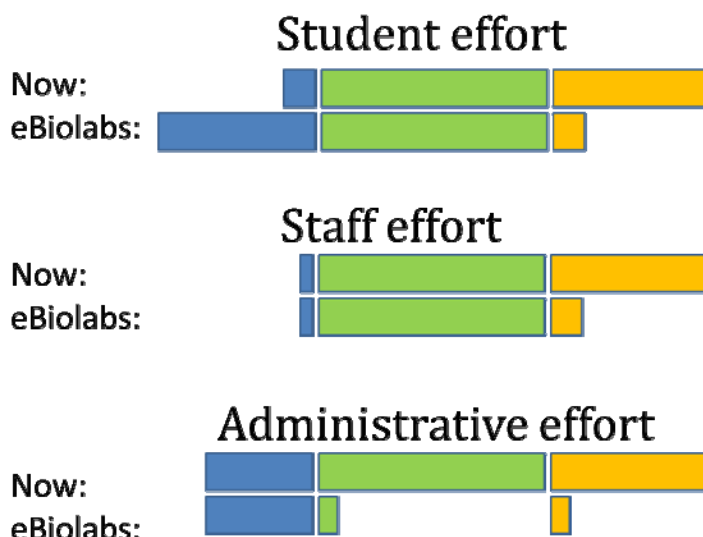


Figure 2. The distribution of effort before, during and after the face-to-face learning session and before and after the introduction of eBiolabs.

We will be assessing the impact of eBiolabs on our stakeholders using the methods detailed in our project plan - focus groups, paper based surveys, interviews and interactions with the eBiolabs VLE.

Section Five: Communications and Dissemination Activities

Provide details of any activities or events which have involved liaison or collaboration outside the project consortium, including key project stakeholders. Attach or provide URLs for any appropriate dissemination or presentation materials. Outline any publicity the project received during the reporting period.

Bristol was fortunate enough to host the first Camel meeting for Curriculum Delivery Cluster Group D (Bristol, Exeter, Hertfordshire and Westminster) on the 7th and 8th May, 2009. The presence of our Critical Friend, Malcolm Ryan ensured that the meeting was productive and a genuine spirit of sharing and collaboration was created. The opportunity to discuss and share our experiences with colleagues at other institutions was most welcome. We are sure that the future Camel meetings will be just as useful. Minutes of the meeting are attached to this report.

The potential of eBiolabs can be quickly grasped by biosciences practitioners. As word has spread of what we are doing we have been invited to give formal presentations to various groups, both within and without the University of Bristol. To date we have given the keynote presentation at The Centre for Medical Education's e-Learning conference and at Cellular and Molecular Medicine's Teaching and Learning Retreat. These former of these resulted in a joint grant application from the Centre for Medical Education, eBiolabs and the Faculty of Science to HEFCE for the funds to take the ideas being developed as a part of this project and investigate in detail the issues of uptake by other subjects and institutions. Regrettably the application was not successful but the process of preparing the grant developed that close working relationships with academics and e-learning professional outside this project and the biosciences. We hope that the next application will be successful, and we believe that once we can demonstrate the benefit of our theories on real learners we the extra preliminary data will greatly enhance our chances of success. Copies of the presentations are attached to this report.

In addition to the invited talks mentioned above, we have also held major dissemination events internal to our home Faculty of Medical and Veterinary Sciences. At these we took the opportunity to reach out to academics, postgraduates, technicians and support staff and make sure that they felt included in the project. At no stage have we encountered resistance to what we are trying to do, reactions from colleagues have ranged from wanting to be directly involved and being willing to set aside time immediately, to those who like the idea but are unwilling to devote time to the process. In one of the most successful departments in a research-intensive university we consider the amount of support and encouragement we have received from colleagues a major success. Copies of the presentations are attached to this report.

Present at our last Steering Group meeting, in addition to representatives from the two University of Bristol CETLs, the four departments of the Faculty of Medical and Veterinary Sciences and representatives from the University of Bristol Central Administration Teaching Support Unit were members external to the university. Dr Pete Lund runs the first year Biosciences course at the University of Birmingham, Dr Neil Morgan ditto at London South Bank University and Dr Paul England has worked in the bioscience industry for the past thirty years. Dr England has been so impressed by what he has seen that he has made a personal donation of £25,000 in order to create an enhanced marks and absences database for use by the eBiolabs system. Both Drs Morgan and Lund were similarly impressed but, being academics, were always unlikely to match Dr England's generosity. They are both however, actively seeking the support to roll eBiolabs in their own institutions. We have also received a donation of £8000 from an ex-student via the Alumni Association. This donor wants to remain anonymous but we will be keeping them involved with the project and hoping to generate a positive experience for them as a way of encouraging others to donate.

The Office for Life Sciences (<http://www.dius.gov.uk/ols>) has recently produced a Life Science Blueprint, a "to do list" as the science minister, Lord Drayson, puts it. The OLS has a remit to improve the landscape for the life sciences sector, one of the "high-tech strategic industries that will play a vital role in: building a stronger Britain of the future; driving growth and prosperity as well as continuing improvements in healthcare delivery; and meeting future challenges such as an ageing population and obesity."¹ When designing the Blueprint the OLS asked the Association of the British Pharmaceutical Industry (APBI) to coordinate a Higher Education Skills Workshop in London in May 2009. Attending this workshop were representatives from industry, SEMTA, the Research Councils, medical funders such as the Wellcome Trust, the National STEM Careers Co-ordinator, and three representatives from higher education, of which eBiolabs was one. The workshop was very positive about what eBiolabs are trying to achieve with regard to the teaching of practical skills as they recognised that this is one of the major skills shortages faced by industry. As a result of this workshop we hosted a visit at Bristol by the OLS, who came to see first-hand what we are doing. Subsequently we have been asked if we would consider taking part in an Industry and Higher Education Forum to address skills gaps.

eBiolabs have also been invited by the Society for General Microbiology to run an interactive symposium on 'Promoting Key Skills in Microbiology Teaching' at their Annual Spring Meeting in Edinburgh. This is an excellent opportunity to spread the word to a group of practitioners in another area of the biosciences.

Section Six: Evaluation

¹ Life Sciences Blueprint: <http://www.dius.gov.uk/~media/publications/O/ols-blueprint>

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Provide brief details of progress to date in terms of the development and implementation of the project evaluation plan, including what you feel has worked, what has not, and any aspects you have changed.

Please outline the key evaluation activities you will undertake in the next 6 month period. Please tell us briefly, the rationale/purpose for activity, planned method, participants, and timing.

As our evaluation plans are well documented in the project plan we will only mention changes here. One additional activity that we will undertake has come about as a result of the Department of Biochemistry agreeing to run one, possibly two, final-year research projects on eBiolabs. This is a relatively new departure for the department where the eight week final-year project (worth a large proportion of the final year mark) is seen as the crowning achievement of the undergraduate career and which normally would take place in a research laboratory. The eBiolabs research projects are intended to investigate if undergraduate output can be used to extend the reach of the project, especially with regard to the MBChB (medicine) degree. Final year project students will be expected to follow up our initial findings regarding the attitude of medical students towards laboratory skills, something which the General Medical Council holds in rather higher regard than the first year medical students who presently struggle to comprehend its relevance to them. While part of the project will be bench based, developing new eBiolabs experiments with more obvious clinical relevance, another part will be to gather information from students who are passing through the eBiolabs system for the first time and comparing their experiences and attitudes with those of their peers who are not yet part of the system.

In another development, the Department of Pharmacology and Physiology within our home Faculty of Medical Sciences has allocated the resources to deliver their undergraduate laboratory sessions via eBiolabs from 2010/11. This will inevitably mean a widening of the scope of our evaluation activities but in structure they will remain as detailed in our Plan. Because the delivery of these new laboratory sessions will not take place until 2010-2011 we be able to include the student experience of learning Pharmacology and Physiology “the eBiolabs way” in our final JISC report but we will be able to report our experience of transferring our development and delivery systems between departments within the University. It is satisfying to report that eBiolabs is well on the way to becoming embedded in the Faculty infrastructure.

Section Seven: Issues and Challenges

Report on issues or problems that are impacting on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.

What strategies have you found useful for engaging stakeholders at this stage of the project?

The major issue we face, our biggest problem, is finding the time to create a something that gives the impression of a well developed, professional product as soon as it is released. We are acutely aware that software systems usually have one chance to create a good impression; if we loose the goodwill of our primary stakeholders, students and instructors, by giving them a poor experience then we will have a major problem with sustainability - even if those problems are relatively trivial and can be easily fixed in the next release. Because of this we are trying to anticipate and circumvent problems before they arise. In the terminology of a typical software development and release cycle we could use more alpha and beta testers but the obvious candidates for many of these roles are also our primary users. If we overuse these testers we run the risk of creating a poor impression with the very people we wish to impress! It has become a balancing act between obtaining as much feedback as possible at every stage and alienating critical opinion formers by using them to test underdeveloped systems. In the final analysis this problem perhaps illustrates why it is useful to employ academics to develop academic systems; unless the system developers

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have a good knowledge of the customs, traditions and working practices of the academic area they are likely to either release under-developed products or estrange their key audience.

Section Eight: Collaboration and Support

Briefly summarise contact with the programme manager, critical friends and support team, formal or informal links with other projects, programme-related activities, and ways in which you have been able to influence the development of the programme.

Do you have any specific needs, requests or suggestions for support?

Do you have any suggestions for how we could make use of the face-to-face time available at programme meetings? For example:

- *Would you be interested in using the time in small groups, working around specific themes?*
- *Would you be interested in using the time to hear from external experts on specific themes?*
- *Would you be interested in using the time for presentations from projects?*
- *Other...?*

How have you found the process of working with your critical friend and Cluster? Please highlight what has worked well and what hasn't worked as well, and any recommendations for how to improve the process.

Contact with our Programme Manager, Lisa Gray, has been accomplished through a variety of media: telephone, email, CircleSpace, at programme meetings and personal visits from our team to JISC Bristol HQ and *vice versa*. In addition Lisa and Sheila MacNeill from CETIS visited us to discuss technical and standardisation aspects of eBiolabs. These interactions have been universally positive with Lisa showing a deal of empathy and understanding while simultaneously being able to make useful suggestions at all stages of the project. Lisa has been given logon access to our development site. The meeting with Sheila from CETIS helped to reassure all involved that our aims are in agreement and we are on track to deliver a project whose choice of technology will not impede its use by other institutions and one that fits within JISCs sphere of activity.

Contact with the Cluster has been accomplished via email and f2f meetings (1 CAMEL and two programme). The outcome of these meetings has already been summarised above.

Our team would be mainly interested in using meeting time to discuss focussed themes in smaller groups and group presentations. External experts are all welcome but again should be on focussed on areas that have direct relevance for the group rather than general themes.

Section Nine: Financial Statement

In this section you should detail the expenditure of the project so far. Against the budget headings you should set out the expenditure for the reporting period, noting any significant over/under spend giving reasons for this. You should also state the total expenditure to date against each budget heading. The table below is designed to help this reporting process. Additional budget headings may be added to fit an individual project's budget. Projects may find it more appropriate to use a spreadsheet to report financial information.

Total Grant	199,439	Duration of project	24 mths
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Transforming Curriculum Delivery through Technology Programme

Reporting Period	Sept 08 to Sept 09
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Budget Headings	Total budget allocated	Expenditure this reporting period	Total expenditure to date	Further information
Staff	97092	43691	43691	
Estate and indirect costs	47008	21154	21154	
Materials: consumables, hardware and software	6992	6223	6223	
Travel, subsistence, dissemination, training and evaluation	6935	3494	3494	
Consultancy	41412	38660	38660	

Checklist:

Before you return this report:

- Ensure that your project webpage on the JISC site is up to date and contains the correct information. Attach details of any required amendments to this report. Project webpages can be found from: www.jisc.ac.uk/curriculumdelivery
- If there have been any changes to the original project plan and/or work packages, ensure that amended copies of the relevant sections of your project plan are attached to this report.
- Identify and name any areas within this report that you'd like removed before the report is made public (*see below)

***Please note** the interim reports will be made available on the JISC website and on the Circle site with the budgetary information removed. We recognise that projects may occasionally address very sensitive issues. We would like you to present as full a picture in this report as you can as the lessons you learn are valuable to us. We assure you that any issues you identify as confidential are removed before the report is made public. Where such issues do represent valuable lessons for the community we will involve you in further discussion as to how they could be passed on without identifying institutions or individuals.

CAMEL



Collaborative Approaches to the Management of e-Learning

Curriculum Delivery Group D Camel Meeting.
Burwalls Centre For Continuing Education, Bridge Road, Leigh Woods, Bristol BS8
3PD.

7th and 8th May 2009

Attendees:

Exeter:

1. Liz Dunne
2. Ali Press,
3. Laura Taylor

Westminster:

4. Mark Kerrigan
5. Mark Clements
6. Gunter Saunders

Hertfordshire:

7. Mark Russell
8. Dominic Bygate

Bristol:

9. Gus Cameron
10. Kelly Moule (not Thursday eve)
11. Paul Wyatt
12. Katy Reford (Learning Science, Thurs only)
13. John Eastman (Learning Science, Thursday eve)

Greenwich

14. Malcolm Ryan

Apologies: Suzi Wells (Bristol)

Agenda

1:00	Lunch - networking	
1:30 - 2:30	Introduction to the Camel Model	Malcolm
2:40 - 3:40	Projects Newsround 15 minutes per project, 'highlights' to include 1) Overview of achievements to date, 2) The next challenge <i>No more than 3 slides please if using PPT!</i>	Project teams
3:40 - 4:00	Tea break - networking	

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4:00 - 5:00	The Student experience A consideration of what we now know about the student experience of using technology in support of learning and implications for our projects.	Malcolm + contributions from institutions
6:30	Drinks at the terrace of the White Lion Bar, Avon Gorge Hotel. http://www.theavongorge.com	Everyone!
7:30	Meal at The Muset restaurant http://www.muset.co.uk	Everyone + guests

Friday 8th May

9:30 - 11:00	'Winning hearts and minds' Sharing of successful strategies for stakeholder engagement - application to current projects	Project teams
11:00 - 11:20	Tea Break - networking	Everyone!
11:20 - 2:30	Forward planning The Programme Meeting and next CAMEL event	Malcolm + project teams
12:30 - 1:30	Lunch and depart	Everyone + guests?

Session 1.

Malcolm Ryan welcomed the group and gave an overview of the Camel model. The group thanked him for his clear explanation and for leaving his underpants on. Malcolm observed that this was not supposed to be taken literally. It seemed as if the change management and engagement aspect of many of these projects was greater than first anticipated. A brief discussion followed of potential models of group interactions, including CIRCLE. The Cluster then split into three groups and considered the perceived strengths and weaknesses of the Camel model, identifying one issue they would like to see taken forward. Posters were presented (attached), transcripts follow.

Session 1 poster transcripts	
Group 1	
Positives/Strengths	Negatives/weaknesses
Safe forum	Too few meetings
Time and space away	Lack of time for meetings
People with similar issues	
Take forward: continue to grow community outside formal meetings	
Group 2	
Positives/Strengths	Negatives/weaknesses
Sharing success and failure	Timings
Support network	
Collaborations	Timelines
Peer networking	

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Funding opportunities	
Take forward: relevancy. Are the clusters authentic?	
Group 3	
Positives/Strengths	Negatives/weaknesses
Being away from the office and other distractions	Timing
Focussed networking	Potential for talking shop. Need to focus on projects. Agenda/discussions
Space to reflect away from the project / away from the detail	Time to prepare
Hear from other projects	
Take forward: collaborative and meaningful engagement	

The projects were then invited to spend a small amount of time bringing others up to speed with progress in a "Project Newsround". These prompted a good deal of discussion as participants discovered they were often using similar technological and pedagogical approaches. Broadly speaking all the projects in the cluster were concerned with assessment and feedback. Various approaches to issues surrounding engagement and change management were discussed. There was agreement that the use of ICT was strategic rather than innovative, perhaps reflecting the "delivery" rather than development focus. In all the projects "working smarter" was a common theme. Malcolm led a discussion about the inappropriate use of technology in education. The group discussed the importance of student engagement and the use of student-driven ICT.

Session 2.

The session started with a discussion of "what is a stakeholder". It was pointed out that when considering issues of this sort it is all too easy to be reduced to compiling a comprehensive list that loses meaning as project resources have to be prioritised. Prioritisation is essential and meaningful action must be put against each stakeholder. It was agreed that the main stakeholder in all projects is the students and that while other groups were important, the primary motivation of the projects was to improve the student experience.

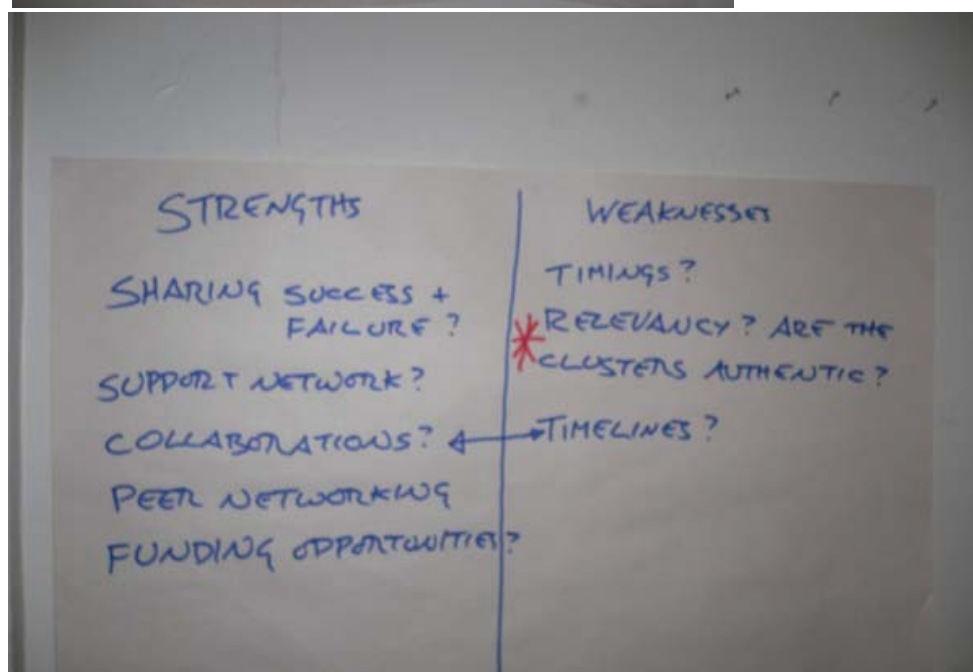
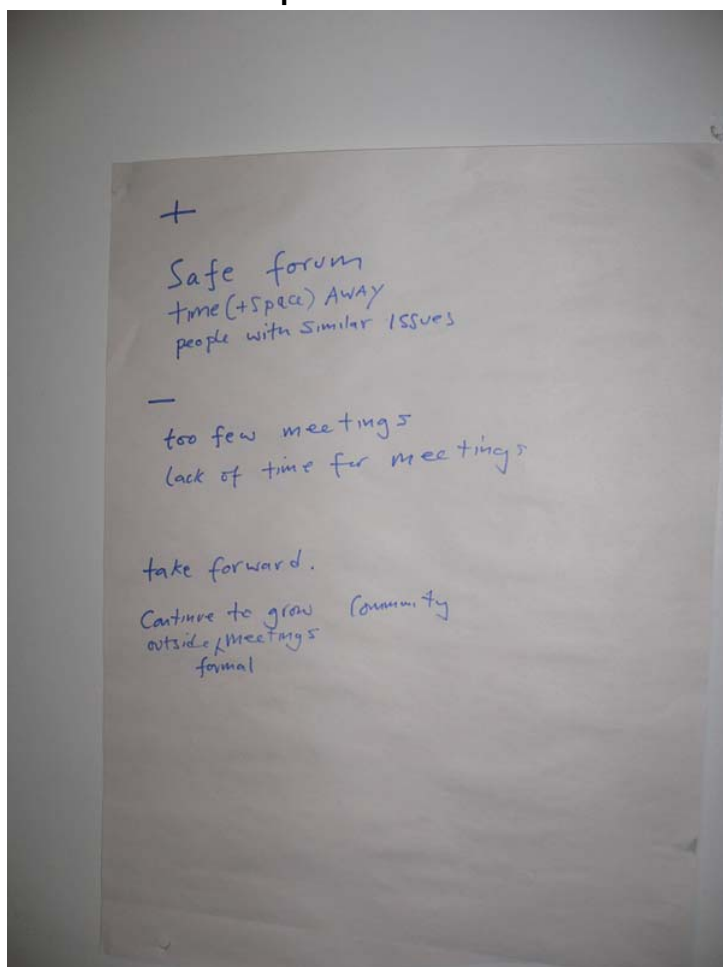
A discussion of change management strategies followed which focussed on the other primary stakeholder group, academic staff under the nominal title "winning heart and minds" which resulted in some good examples of how the groups are going about this. Exeter in particular showed the way forward by making sure their dealings with academic staff were frequent, bilateral and supportive of staff at all stages from inception to analysis. Herts had identified module leaders as key opinion formers who were able to influence others. Westminster observed that in their experience 60% of staff were helpful and wanted change, 30% were neutral but were relatively easily engaged, and 10% of staff hostile. Peer pressure and the power of a positive example were seen to be critical to effecting change, especially with the reluctant 10%.

Some time was spent discussing project management issues, in particular the recently submitted project plan. The creation process of the plans was felt to be unusually time consuming for projects of this sort. Several groups felt that they had lost ownership of the plans by the time they were completed. Concern was expressed that the projects would suffer if the interim reports were as time consuming to produce as the project plans. The

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timing of future meetings was also discussed. It was agreed that future meetings should take into account the academic timetable as these were delivery projects dealing with real students. Possible dates and venues were discussed with Malcolm agreeing to consult teams once they were back at their desks. There was general agreement that having the meeting over lunchtime-lunchtime was very beneficial as the social interaction at the evening meal allowed issues to be raised that could then be discussed the following morning. The groups split again to discuss timing and agenda issues (captured and attached). The meeting finished with rounds of thanks, especially to our Critical Friend for helping to facilitate the meeting and to the hosts for organising the venue.

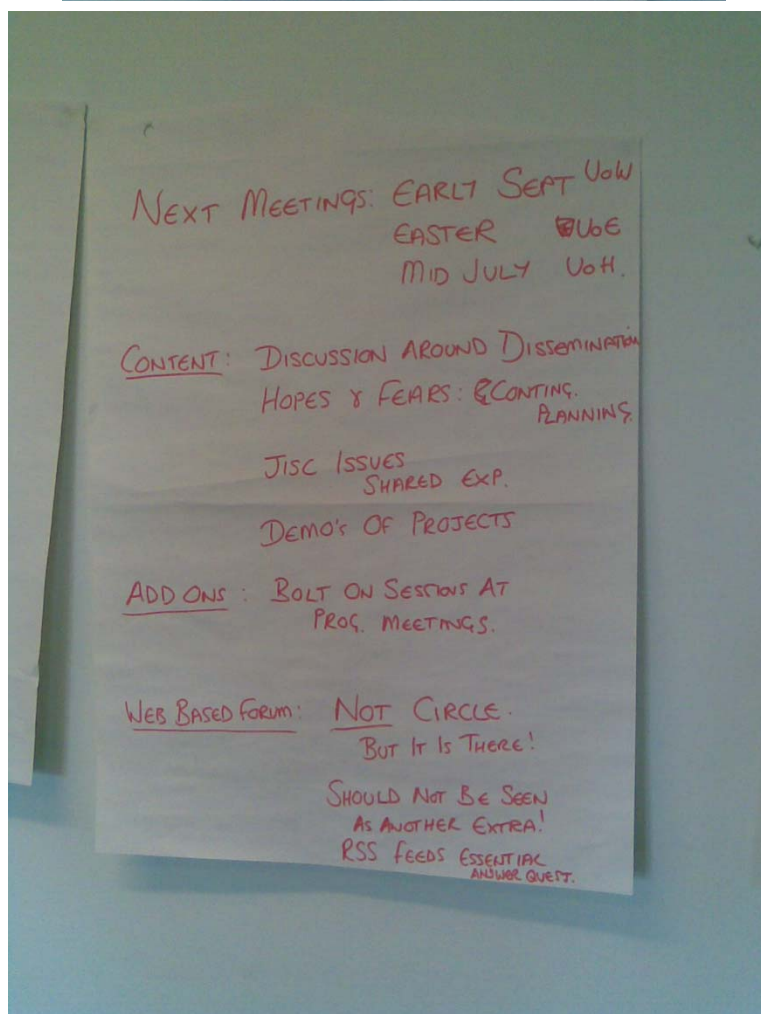
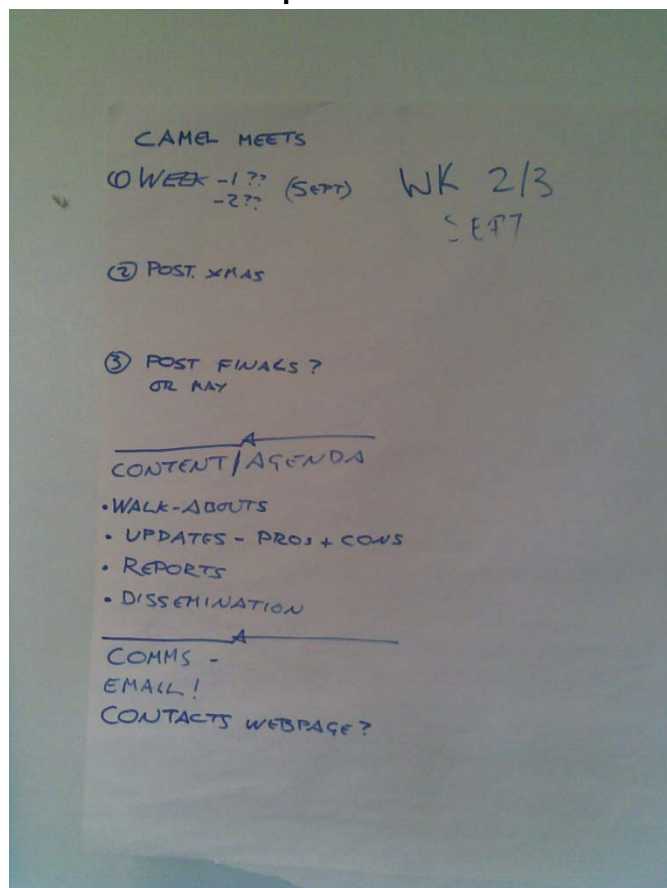
Breakout session 1 posters.

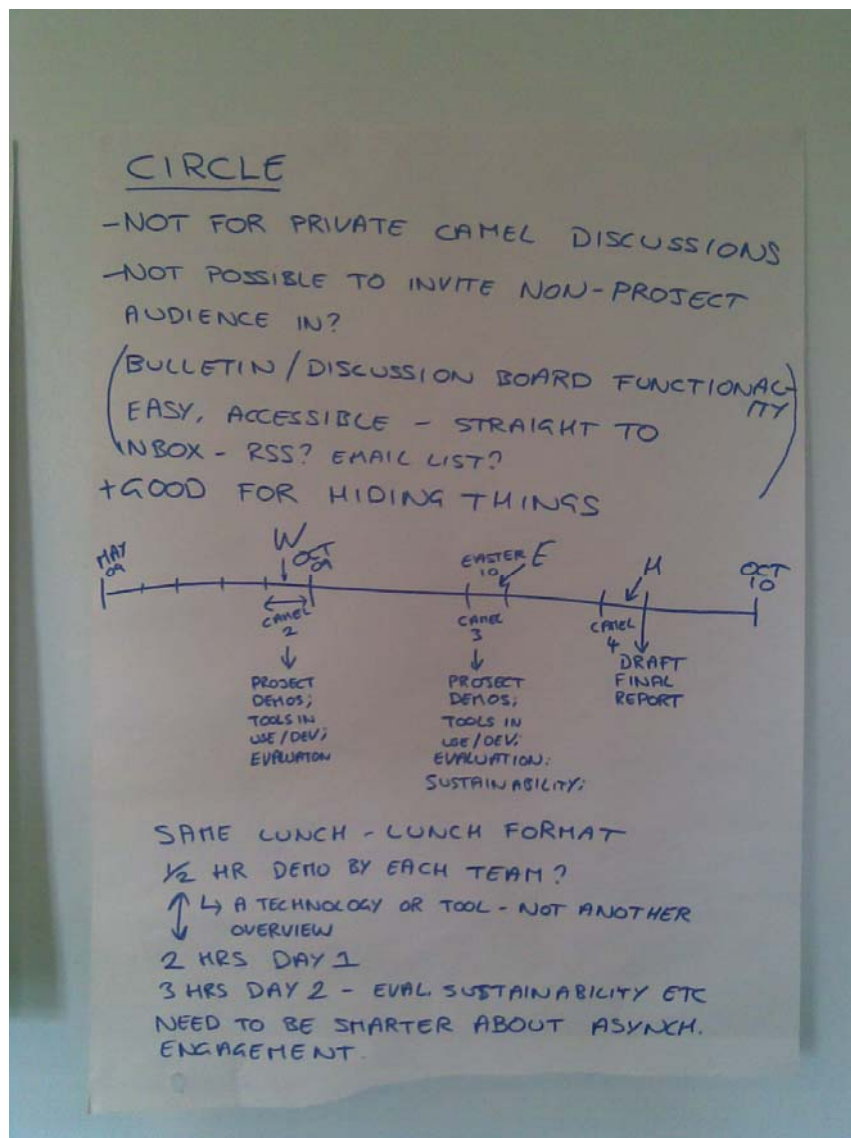


STRENGTHS / WEAKNESSES

- + BEING AWAY FROM THE OFFICE
+ OTHER DISTRACTION
 - + FOCUSED NETWORKING
 - + SPACE TO REFLECT AWAY FROM PROJECT
 - ↳ AWAY FROM THE DETAIL
 - + HEAR FROM OTHER PROJECTS
 - TIMING
 - POTENTIAL FOR TALKING SHOP
 - ↳ NEED TO FOCUS AGENDA/DISCUSSIONS ON PROJECTS
 - ↳ TIME TO PREPARE
- ↑ ↑ ↑ ↑ ↑ ↑
- COLLABORATIVE + MEANINGFUL ENGAGEMENT!

Breakout session 2 posters





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