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EXECUTIVE SUMMARY

The APT STAIRS project's aim has been to promote the use of new collaborative technologies to enhance teaching and learning practice. This has involved working with four main stakeholder groups in the Bloomsbury Colleges: students, teachers, researchers and administrators. In particular, the project aimed to bridge the technological divide between these users by implementing a simple, step-by-step approach to adopting new tools. As part of this process, new methodologies in learning, teaching, research and administration were developed.

A survey of staff and students within the Bloomsbury Colleges was conducted to collect baseline data on their use of technology; this provided the project team with a better understanding of the user groups. By creating generic user profiles to represent the Bloomsbury stakeholders, preferences for various technologies were identified. This helped to illustrate the gaps between stakeholders; for example between academics and undergraduates, administrators and researchers, postgraduates and support staff.

The project team then established and worked with seven demonstrator projects located in the Bloomsbury Colleges. Each of these demonstrators included a number of the principle stakeholders who were encouraged to work together using online collaborative tools, such as Google Docs. The Project Officer supported each demonstrator by providing training and guidance to enable the users to adopt and integrate new approaches to their work. Project monitoring and evaluation indicated that users found these collaborative approaches enhanced their working practices.

As a result of these pilots, a number of second generation initiatives have started. This arose partly as a result of dissemination work carried out by project staff but also in some cases spontaneously through personal recommendation by demonstrator participants. For example, the work with collaborative documents has triggered a major new development within the Royal Veterinary College (RVC) where students are developing and sharing clinical cases material using simple Microsoft PowerPoint tools. The Benefits Realisation development of collaborative research environments is another successful example. This reflects the value and relevance of applying the Users & Innovation Model (UIDM) to develop and disseminate good practice.

The project team has also been involved in a wide range of other activities to support research and development into online collaboration. This has included working closely with demonstrator leaders and participants to explore perceptions of existing technologies and to identify their needs for potential or future uses of technology. A range of training materials and videos have been developed to support the project and made available via the project website. Regular blog posts and background information were added to the website to keep stakeholders, the Bloomsbury and JISC Emerge communities and the wider world up-to-date with project developments.

BACKGROUND

The Bloomsbury Colleges comprise six internationally renowned Higher Education (HE) institutions within the University of London, which between them support 15,000 undergraduate and 14,000 postgraduate students (HESA 2005/05). In the last 5 years, the Colleges have been working closely together to introduce a common learning platform, the Bloomsbury Learning Environment. This close working partnership has also been the basis for collaboration on the development and support for e-learning developments across the institutions. The APT STAIRS project arose from this association and represented a unique opportunity to trial the use of new technologies across a number of different academic settings.

Over the past 10 years, the opportunities offered by technology have grown significantly and next generation web technologies and practices now present exciting opportunities to enrich teaching, learning and research. However, the average Bloomsbury lecturer or researcher has been left struggling to keep up with this rapid pace of change. As a result, the full potential that these new technologies have to offer has not always been fully realised beyond those members of staff who are early adopters of technology. Meanwhile the learners, sometimes identified as "digital natives", a term coined by Marc Prensky (2001), are now often fully conversant with the social and gaming applications of technology. Their confident use of the technology, including multi-tasking, flexible and independent working, often does not sit comfortably with the lecturer's more limited technical abilities. Clearly, this can result in a "mismatch" in approaches to the use of new technologies between the different stakeholders. This could reduce the benefit that might be derived from effective use of Web 2.0 tools and the adoption of new teaching and learning styles offered that they offer (Dede, 2005).

One significant feature of recent web-based tools is their ability to bring different users together through collaborative working practices. Franklin and van Harmelen (2007), stress the value of group work, social constructivism (knowledge created through social interactions) and constructionism (constructing a public entity) in developing effective teaching and learning environments. This raises the prospect that new tools such as wikis and collaborative documents could go some way to bridging the perceived technology gap. The APT STAIRS project sought to exploit this opportunity by using Google Docs as an exemplary simple collaborative set of tools, which could be used by all stakeholders irrespective of their skills or confidence. However, the project team were cognisant of the generic attributes of collaborative document editing wherever these could be inferred from the data collected.

While it was important to focus on the interest of the main stakeholders, it is also crucial not to lose sight of institutional and organisational factors. Damanpour (1991) highlights the need for a multi-dimensional approach that includes individual and organisational influences. This is because policies such as e-learning strategies as well as general infrastructure and support issues may require additional organisational changes to support innovation in a sustainable way. This is particularly important in the Bloomsbury Colleges' context, where multiple institutions need to make their own decisions and changes in order to embrace innovation on technological and personal levels.

It is important for HE institutions to keep abreast of new e-learning methods and styles, catering to the learning experience of all individuals and addressing their individual needs. The APT STAIRS project specifically addressed the need for greater use of collaboration in learning which. Beckman (1990) identified some of the advantages of this collaborative approach including reducing the stress of working alone for long periods of time, greater achievement through discussion of issues by people with differing opinions and making tasks appear less daunting by providing a common environment. Learners also report that learning is more enjoyable when applications are user-friendly and when working in social groups.

The APT STAIRS project used an incremental approach to the introduction of innovation into learning and teaching practices. In particular, the project focussed on investigating how collaboration could bridge the perceived technological “gap” between users which appears to be increasing between the digitally aware learners and technologically inexperienced staff.

AIMS AND OBJECTIVES

The overall aim of the project was to address the technological gap between different user groups through the adoption of Web 2.0 collaborative tools. The APT STAIRS team has done this by using the Users and Innovation Development Model (UIDM) (Fowler and Scott, 2007) to assist in identifying, piloting, developing and deploying appropriate technologies that address the collective needs of key stakeholders.

Objectives

The following five objectives were designed to address the aims of the project:

Research

Deriving a comprehensive overview of existing practice and the impact of new technologies across all the partner institutions. This was achieved by conducting the Bloomsbury web use survey.

Development

Adapting existing collaborative web technologies to ensure they meet the needs of key project stakeholders achieved through technical developments of Google Docs. For example, a search tool for use in a Google Doc spreadsheet was developed for one of the demonstrator projects; this was embedded into the institution’s Virtual Learning Environment (VLE).

Implementation

Introducing and trialling the use of online collaborative tools in a range of different HE scenarios. This was achieved by introducing Google Docs in seven different ways (via the demonstrator projects). In addition, the experience of using Central Desktop by a member of research staff in one of the partner Colleges was also captured.

Evaluation

Evaluation of the project was carried out using established procedures to monitor the impact, benefits and lessons learnt during the project. A full evaluation report has been commissioned by the project team and will commence in April 2009.

Dissemination

Dissemination of the project has been achieved through the results of the research and development being made available both internally and to a wider external audience. For example, through the development and maintenance of the project website; running various events to showcase Google Docs; the delivery of a number of press and academic articles.

METHODOLOGY

The relatively short time-scale for the project limited some of the possible methodologies available to carry out a desired grounded theory approach (Glaser, 1998) for the project. However, the UIDM was identified as meeting the project's methodological needs since its cyclical nature allows research-driven development to progress dynamically alongside evaluation; the UIDM thus ensures rapid and agile development. Based on the UIDM, the project methodology consisted of five principle phases – research, development, implementation, evaluation and dissemination. The specific tasks involved in each of these aspects of the project are detailed below:

Background research

This involved an initial cross-institutional online questionnaire survey of both staff and students that was designed to measure the types of technology currently being used by these different stakeholder groups. Previous experience with Google Docs at the London Knowledge Lab (LKL), Royal Veterinary College (RVC) and the School of Pharmacy (SoP) was also compiled using an analysis of logged usage data and user accounts, and included a small number of interviews with users. These analyses served to establish a basic usage pattern and to identify common benefits, drawbacks, pitfalls and opportunities in order to inform and provide initial guidelines for the demonstrator projects. The analysis also helped to frame technological requirements and skill levels of users who were involved in the demonstrator projects. This research work was completed at the end of September 2008.

Technological development

The principle intention of the APT STAIRS project was to use existing technologies such as Google Docs rather than to develop anything new. However, there was a need to integrate these tools into institutional systems such as the Bloomsbury Learning Environment (BLE) – a shared Blackboard platform used by five of the Colleges.

An example of such a development is the London International Development Centre's (LIDC) searchable database of all its members. Academics from all six Bloomsbury Colleges register to become members of the LIDC by completing a simple Google Docs form, which feeds into a Google Docs spreadsheet. A bespoke search tool, enabling members only to search for common areas of interest, was designed and developed to be easily accessible via the BLE. The technical development was informed by the requirements of users identified in the LIDC's initial research. This work was undertaken by the Technology Lead with assistance from Google and the wider Google Community. The developments were agile in practice, being informed by the user initiative as defined in the UIDM.

Demonstrator pilots

APT STAIRS ran seven demonstrator projects across the Colleges, involving a range of stakeholder groups. Each demonstrator formulated a set of requirements which were felt to address collaborative approaches. The Project Officer was responsible for working with the demonstrator participants to see how the research lessons and technology developments could best be fashioned to suit their needs. The demonstrator leaders and participants received training and support in the use of Google Docs from the Project Officer. These demonstrators ran for the duration of the 2008-9 Autumn term in order to fit with users' existing commitments.

Pedagogical evaluation

Pedagogical evaluation of the project was based around an evaluation framework drawn up by the Research and Pedagogy Leads. The framework focused on the three themes: Functionality, Management, and Experience. The framework supplied a format for capturing individual perceptions and fed back to the technological developers comments about the appropriateness of

the technology and effectiveness of its use. The framework was flexible enough to allow exploration of the purposes of the new technology; it was robust enough to provide clear, technical specifications for the developers to document. Thus, the findings from the impact learnt from each demonstrator project informed the subsequent applications.

A further stage of pedagogical evaluation will be carried out during the two-month extension to the project, using established quantifiable procedures along with semi-structured reports with staff to elicit further impacts, benefits and lessons that can be learnt about using collaborative technologies.

Dissemination of experience

Dissemination within the Bloomsbury Colleges will continue to take place through structured approaches such as showcase workshops (e.g. a student showcase will be carried out in June 2009); regular BLE bulletins and training events. Dissemination also took place informally by the demonstrator project participants in promoting their successes to their colleagues and other institutions by word of mouth. On a national level, the Project Officer publicised the project on the APT STAIRS web site (www.bloomsbury.ac.uk/apt), referring to articles in the press and through a regularly updated blog. Research findings from the project will also be presented at conferences, including Blackboard Europe 2009 and the JISC Conference 2009. Academic articles will also be proposed for publication.

IMPLEMENTATION

The initial stage of the project involved several streams of work running in parallel. These included the survey of staff and students of the Bloomsbury Colleges and commencement of a number of demonstrator projects that were initiated following the project launch event, the first of the planned dissemination events.

The Survey

The survey of web use, was delivered using Survey Monkey, a web based survey tool and made available to all students and staff in the Bloomsbury Colleges. It was devised to gain an overall understanding about the users, the technologies they used and their attitudes to new technologies. Responses to the survey were then used to create generic *personas* (composite fictional characters) generated from the patterns of answers obtained; this aided the project team to visualise the typical Bloomsbury users.

The aim of the launch event was designed to create an awareness of the project amongst the participants and the Bloomsbury community, informing them about the project's aims and objectives. Speakers were invited from JISC, Google and the Bloomsbury Colleges as well as presenting a live demonstration of Google Docs for demonstrators to see the tools. In addition to the launch, a project website using Google Sites was built to help disseminate and share project information to a wider and more public audience.

Demonstrator projects

Google Docs was identified as the most popular and simplest of the online document editing tools available at the time. It was therefore selected as the tool to be used by the demonstrator projects. The demonstrators included:

Royal Veterinary College: RVC Animal Husbandry Extra Mural Study Placement Reviews

Using the Word Processing application in Google Docs, first year veterinary students created and edited among themselves a database of farm placements to share their experiences.

Royal Veterinary College: RVC Library Spreadsheets

Library staff at the RVC created a database using Google Forms and Spreadsheet for library book suggestions and orders. The book suggestion form was embedded in the RVC's intranet for all students and staff to use and the spreadsheet was shared amongst the RVC library team across the two college campuses.

London International Development Centre: LIDC Membership

The LIDC, using the form and spreadsheet applications in Google Docs, built up a shareable database of information on all the academics working in the area of international development.

School of Oriental and Asian Studies: RSS Portal

SOAS' PhD research students created the RSS (Research Students' Society) portal for the SOAS website using Google Forms, Spreadsheets and Docs to help with their research and planning. They used the forms application to gather information for the research stages and the word processing application to exchange and edit documents.

The School of Pharmacy: Medicine's Profile Exercise

As part of a mandatory exercise, first year SoP students used the Google Docs word processor application to create, edit and share group information on drug variables.

Birkbeck: Easy PC Learning

Birkbeck's Biological Science academic staff used Google Docs and Google Gears (allowing offline use of Google Docs) to explore new forms of collaborative learning in the laboratory. Results from laboratory experiments were recorded by students in real-time into the Google Docs spreadsheet application shared by the class. This was done using lightweight, portable Eee PC's, provided to the students and funded by APT STAIRS.

Institute of Education: Advanced Online Collaboration

Staff at the IOE explored whether Google App's advanced features, could be used to enhance their current projects through advanced online communication methods and techniques. They looked particularly at spreadsheets, widgets, gadgets and also explored the use of Google Docs with hand held devices.

A second promotional event, the Demonstrator Lunch, was held halfway through the project. This provided an opportunity to share participants' knowledge and experiences with the use of Google Docs. A World-Cafe approach was used at this event to facilitate the sharing of ideas. This encouraged brain-storming in small groups through the use of paper covered tables on which participants were encouraged to capture their ideas and views. Group membership was changed every 20 minutes and conversations at each table were steered by members of the project team. Each group was given the task of considering one of three fictional Bloomsbury *personas*; discussing how each *persona* might use Google Docs and how the tool could be best developed to address the *persona* needs.

The outcomes from the demonstrator lunch event and other usability testing strategies were used to guide the projects next phase: technical development of potential applications that would improve the users' experience of Google Docs. These included applications for the Android mobile phone as well as more advanced communication and archiving tools. Wireframe designs (software interface designs) were created by the team to help visualise these possible

developments. Following the usability testing that took place at the lunch, it became apparent that institutional templates in Google Docs were needed. As a result, the Project Officer developed various versions of the requested templates (i.e. for CVs, lab books and dissertations). The advantage of creating templates in Google Docs compared to standard desktop applications is that additional functionality can be included in terms of meta-tagging; this improves the ease of usability of the application. The templates will be designed during the extension period of the project, with support from Google's templates developers in the US. APT STAIRS plans to be the first to contribute to Google's template catalogue when it opens to the public.

End of project evaluation

An initial evaluation was carried out during January – March 2009 in which demonstrator project leaders and participants were invited to complete a short questionnaire eliciting their opinion about the project's value and outcomes. The results of this evaluation are reported in the outcomes later in the report.

A second, more extensive questionnaire, building on the responses to the first and also the Bloomsbury Web Use Survey will be deployed during June 2009. This will be combined with semi-structured reports obtained from each demonstrator project to provide the data required to fully assess the impact of the APT STAIRS approach and individual projects benefits and weaknesses.

Project Timetable

An outline of the project timetable is given in Table 1.

		Feb 08 – June 09 (17 Months)																
		F08	M08	A08	M08	J08	J08	A08	S08	O08	N08	D08	J09	F09	M09	A09	M09	J09
WP1: Project Management																		
Task1	Recruit Project Officer	■	■															
Task2	Ongoing monitoring and reports	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task3	Organisation of workpackages			■	■	■												
Task4	Establish project advisory group	■																
WP2: User Events and Training																		
Task1	Train Project Officer			■	■													
Task2	Prepare and run staff led learning showcase									■	■							
Task3	Prepare and run student led learning showcase																■	■
WP3: User Demonstrators																		
Task1	Finalise demonstrator framework	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task2	Facilitate demonstrator groups		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task3	Monitor and evaluate demonstrator impact		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task4	Document and disseminate demonstrator results								■	■								
WP4: Technical Enhancements																		
Task1	Develop relationships with Google community	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task2	Create technological development plan						■	■	■	■	■	■	■	■	■	■	■	■
Task3	Research & Develop APP (Google Docs API)								■	■	■	■	■	■	■	■	■	■
Task4	Provide input to e-Framework												■	■	■	■	■	■
Task5	Support and develop innovation implementation																■	■
WP5: Evaluation and Dissemination																		
Task1	Set up project web site	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task2	Create project publicity materials				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task3	Send out e-newsletters				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Task4	Prepare and run final workshop																■	■
Task5	Commission final project evaluation															■	■	■
Task6	Complete and distribute final report															■	■	■
WP6: U&I Model v2.0																		
Task1	Review value and relevance of UIDM v1.0											■	■	■	■	■	■	■
Task2	Identify and support phase 2 projects																■	■

Table 1: APT STAIRS project timetable

OUTPUTS AND RESULTS

The APT STAIRS project was unique in that it set out to explore different ways in which appropriate and easily deployable technologies could be used in teaching and learning, with the dual aim of bridging the perceived technological gap between teachers and learners and at the same time enhancing collaboration. The output of the project has therefore been directed primarily at promoting, at academic and public levels, overviews of the demonstrator projects and the pedagogical and technical guidance that has been learnt from these.

Public Showcases

Three public showcases will have been delivered by the conclusion of the project. The first of these was the initial launch, a learner focused event to involve users in developing and refining appropriate technologies. The second event was the demonstrator lunch which was a cross-institutional, academic-led showcase to demonstrate the potential of APT approaches to a wider academic audience. The third, final event planned for June is a project workshop with a major learner involvement to present the project experience and identify future areas for development.

In addition to the workshops, the APT STAIRS project also had articles published in the Times Higher Education Supplement, two articles in the Guardian and contribution to JISC Inform. The project has been a regular feature in the BLE-bulletin for the Bloomsbury community. The team has created and distributed publicity materials and practical guides among its users. A publically available project website and blog was created early on, which included comprehensive documentation on project development, lessons learnt, case studies and user guides.

Academic papers and conferences

Members of the APT STAIRS project have also been particularly active in generating a number of papers for the academic community. These include articles in ALT-N about the project, a paper to the Blackboard World conference (Barcelona, April 2009) and another proposed paper to ALT-C 2009. In addition there have been presentations at the JISC Benefits Realisation workshop for the Institutional Exemplars Programme (November, 2008), the JISC U&I Programme Conference (March 2009) and the JISC Conference 2009.

Other outputs

A number of other outputs have also been identified as outcomes from the project including raised awareness within the Bloomsbury Colleges of the potential future impact of Web 2.0 technologies on traditional academic practice as well as helping students develop new collaborative study skills. These include several spin offs including:

Introduction of Goggle Applications for all SOAS staff and students

This was partly a consequence of the APT STAIRS project collaboration with Google and the appreciation of the potential use of free collaborative tools such as Google Docs. As a result, all students and staff now use Google applications and email on a daily basis.

Academics and students use of Google Docs to collaborate with colleagues

It can be difficult to track exactly how and why technologies are adopted within an institution. However, there are several clear cases where the APT STAIRS project has raised awareness of collaborative approaches and spawned new uses of these technologies. For example one senior academic now uses Google Docs to collaborate with colleagues around the world to write research proposals.

Creating collaborative clinical cases

The RVC has developed a novel student-managed clinical case recording system largely inspired by the APT STAIRS model. This is based on simple tools such as PowerPoint and digital video cameras which final year students use to capture clinical information which is then shared with their clinical supervisors. The project has proved a success largely because both students and staff are comfortable working with the basic technologies. The APT STAIRS project helped support the project through the purchase of netbooks, digital cameras and digital stethoscopes which are now used on a daily basis.

International collaboration

The London International Development Centre (LIDC) is now working with the RVC to develop new North South partnerships using simple technologies. Whilst this development is still at an early stage, the relevance of the APT STAIRS model has already been of value in looking at differences between learners in Africa and those in the UK and identifying ways to bridge this "gap"

Demonstrator evaluation

Demonstrator staff were asked to complete a short, web based, questionnaire about their experience, between January and March 2009. Feedback was provided on all seven projects by respondents who were either participants or the demonstrator leader of the project. All respondents expressed a positive attitude about their individual demonstrator projects and, without exception, stated they would use Google Docs again and also recommend Google Docs to others. In addition 5 respondents said they had already recommended Google Docs to others. All 5 of these stating because they felt the other person would find it useful and 2 also stating because they wanted to collaborate with the staff member. This is a significant spread of innovative practice by word-of-mouth based upon limited use of the technology by these participants.

Respondents were asked about which functionality (word processor, spreadsheet or presentation functions) they used, their academic level and self-perceived skill level with the Google Docs application. As all respondents were positive about using Google Docs it is not possible to state which of these might be factors in individual's experience of using this collaborative tool. It may well be that this finding is reflecting what was originally required from Google Docs which is an application easy enough for all to use.

Analysis of the more detailed answers about what aspects participants found worked particularly well or presented some issues confirmed that all had used the tools collaboratively and this use was something they found to have worked well. Due to the varying nature and needs of each of the different demonstrator projects further analysis of comments are not relevant. However, other notable points to come out of respondents comments included finding Google Docs good for monitoring student's work and finding its automatic saving of old versions and being able to see the revisions others had made as very welcome added functionalities.

From the issues that projects encountered there were some wishes identified as improvements for Google Docs. The most common was a desire for improved user management, better address book functionality and being able to share documents between much wider groups of users. This arose from the finding that Google Docs is geared towards collaboration between small groups of users. When group sizes increase to perhaps several hundred students requiring access to documents the user management becomes very cumbersome and this limited some demonstrators in what they wanted to do with Google Docs.

Two projects mentioned Google Docs functions not working as expected resulting in staff having to find work-around solutions. The fact that these staff were able to be creative suggests that they were confident in exploring alternative solutions with Google Docs and that they felt the effort involved would be worth the return. This will be explored further in the final data-gathering phase to determine whether these staff were already confident with exploratory approaches, or had been encouraged by some attribute of the collaborative approaches they were taking themselves.

Other desires identified by projects as improvements to Google Docs were tagging of documents, a shareable space like YouTube or Flickr where individuals could search for documents based on tags and also improved graphing tools which were regarded by some as being very basic.

BLOOMSBURY SURVEY OF WEB USE

Data sample

Of the 1254 recorded entries from the six colleges, 12 entries were created by the same individual over separate dates. Of these only the first initial entry was used for analysis (n = 1242). Data regarding the role of participants was available for 1239 of these (Table 2). There were no significant differences found between the proportions of individuals' from each role between institutions in the sample, indicating that comparisons between institutions are not biased.

		Birkbeck	Institute of Education	London School of Hygiene and Tropical Medicine	Royal Veterinary College	School of Oriental and Asian Studies	School of Pharmacy	Total
Academic staff	Count	17	45	10	38	4	15	129
	% within Role	13.2%	34.9%	7.8%	29.5%	3.1%	11.6%	100.0%
	% within Institution	12.9%	13.4%	10.5%	8.6%	4.0%	11.4%	10.4%
Research staff	Count	1	30	4	29	2	11	77
	% within Role	1.3%	39.0%	5.2%	37.7%	2.6%	14.3%	100.0%
	% within Institution	.8%	8.9%	4.2%	6.5%	2.0%	8.3%	6.2%
Administrative staff	Count	12	85	7	44	3	12	163
	% within Role	7.4%	52.1%	4.3%	27.0%	1.8%	7.4%	100.0%
	% within Institution	9.1%	25.3%	7.4%	9.9%	3.0%	9.1%	13.2%
Support staff	Count	11	34	2	30	5	6	88
	% within Role	12.5%	38.6%	2.3%	34.1%	5.7%	6.8%	100.0%
	% within Institution	8.3%	10.1%	2.1%	6.8%	5.0%	4.5%	7.1%
Postgraduate student	Count	23	120	69	49	43	22	326
	% within Role	7.1%	36.8%	21.2%	15.0%	13.2%	6.7%	100.0%
	% within Institution	17.4%	35.7%	72.6%	11.0%	43.0%	16.7%	26.3%
Undergraduate student	Count	57	2	1	238	40	61	399
	% within Role	14.3%	.5%	.3%	59.6%	10.0%	15.3%	100.0%
	% within Institution	43.2%	.6%	1.1%	53.6%	40.0%	46.2%	32.2%
Other	Count	11	20	2	16	3	5	57
	% within Role	19.3%	35.1%	3.5%	28.1%	5.3%	8.8%	100.0%
	% within Institution	8.3%	6.0%	2.1%	3.6%	3.0%	3.8%	4.6%
TOTAL	Count	132	336	95	444	100	132	1239
	% within Role	10.7%	27.1%	7.7%	35.8%	8.1%	10.7%	100.0%
	% within Institution	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 2: Cross tabulation of the individuals responding to the Web Use Survey by role and institution.

Digital Natives v Digital Immigrants

One of the early suppositions of this project was that students were more proficient and aware of using information technology than the older generation. Coined by the terms *digital natives* and *digital immigrants* respectively by Marc Prensky (2001). To test this assumption the subgroup of undergraduate students representing the younger 'digital natives' was compared against the academic staff subgroup (representing the digital immigrants). 81.6% of undergraduate students were aged under 26 years compared to only 2.3 % of academic staff (Table 3), indicating that the survey sample would be representative of a younger undergraduate digitally native population and also an older digitally immigrant population of academic staff.

	18-21	22-25	26-30	31-40	41-50	51+
Academic staff	0.0%	2.3%	7.0%	26.4%	31.8%	32.6%
Undergraduate student	46.1%	35.5%	10.3%	6.5%	1.3%	0.3%

Table 3: Distribution of ages between all academic staff and undergraduate students

When academic staff's use of Web 2.0 technologies was compared against undergraduate students, there were some significant differences (Table 4). Although undergraduate students used some technologies significantly more than academic staff, the reverse was true for other technologies.

Information Technology	Greatest use by:	χ^2	p =
Blog	--	6.058	0.109
Photo sharing	--	4.339	0.227
VOIP	--	3.121	0.373
eJournals	Academic Staff	86.795	<0.0001
RSS Reader	Academic Staff	8.642	0.034
Discussion Board	Academic Staff	12.289	0.006
Video Conferencing	Academic Staff	31.893	<0.0001
Groupware	Academic Staff	17.602	0.001
Virtual Worlds	Academic Staff	16.840	0.001
Wiki	Undergraduates	13.136	0.004
VLE	Undergraduates	22.051	<0.0001
Podcasts	Undergraduates	9.036	0.029
Video sharing	Undergraduates	37.917	<0.0001
Text chat/IM	Undergraduates	73.641	<0.0001
Social Networks	Undergraduates	162.282	<0.0001

Table 4: Comparison of web technology use between Academic Staff and Undergraduate students on the Bloomsbury Colleges.

Looking at the significant differences summarised in Table 4, undergraduates used more of what has become to be regarded as the generic Web 2.0 technologies (wikis, VLEs, podcasts, video sharing, texting and social networks). Academics on the other hand used eJournals, RSS Readers, discussion boards, video conferencing, group ware and perhaps surprisingly virtual worlds more than undergraduates. It is surmised that while the data may reflect students as being digital natives, academics are more than competent digital immigrants and are regularly using the technologies that support their work. This hypothesis is borne out by the observation from the data that academics regard themselves significantly more skilled in using the office applications than undergraduate students (Word processor – $\chi^2 = 13.214$, $p = 0.004$; Spreadsheets - $\chi^2 = 18.922$, $p = 0.001$; PowerPoint - $\chi^2 = 49.102$, $p < 0.0001$).

This trend is also reflected in academics use of online Google Doc applications such as text editors ($\chi^2 = 14.433$, $p = 0.002$) and spreadsheets ($\chi^2 = 8.638$, $p = 0.035$) compared to students. Although, there was no difference between academics and students regarding the online editing of slides, images or mash-ups. The questionnaire however was unable to answer whether this online use of Google Docs was collaborative.

It was not possible to draw any conclusive evidence comparing use of these technologies across the different Bloomsbury colleges as half of the colleges surveyed had too few respondents in either the academic or undergraduate sub groups.

The data was reanalysed to compare the differences between all students (undergraduate and postgraduate) against all staff (academic, research, administrative and support). Staff still rated themselves significantly more proficient in the use of all the office technologies. However, for PowerPoint, although 86.6% of students rated themselves as having sufficient or expert skill compared to 81.7% of staff, a greater percentage of staff (27.1%) rated themselves as expert

compared to the proportion of students doing so (17.7%). Table 5 details the percentage within each of the staff and student categories used, who reported to be regularly using the surveyed technologies. Of particular note is the discrepancy between academics regular use of social networks (15.7%) and undergraduates (72.0%), also with instant messaging (IM) which 46.3% of undergraduate students use on a regular basis compared to only 17.3 of academics. This suggests that there is potential for colleges to explore the use of social networks and instant messaging, etc as mediums for teaching and learning.

Information Technology	Greatest significant use by	Academic Staff	Research	Administration	Support Staff	Postgraduate	Undergraduate
Blog	(no diff)	8.1%	12.8%	9.8%	9.3%	11.7%	5.3%
Photo sharing	(no diff)	8.3%	13.9%	13.3%	11.8%	8.5%	11.8%
Discussion Board	(no diff)	23.5%	15.2%	15.8%	26.7%	25.2%	13.7%
eJournals	Staff	77.0%	65.8%	21.3%	32.9%	58.9%	31.9%
RSS Reader	Students	9.0%	19.2%	6.1%	14.0%	10.3%	10.3%
Wiki	Students	31.1%	43.0%	24.8%	32.9%	36.7%	47.9%
VLE	Students	53.7%	15.2%	24.2%	30.2%	53.3%	71.5%
Podcasts	Students	10.4%	6.6%	6.7%	12.8%	8.9%	13.4%
Video sharing	Students	10.4%	12.8%	10.9%	18.6%	21.1%	24.9%
Text chat/IM	Students	17.3%	34.2%	23.0%	27.3%	44.7%	46.3%
Social Networks	Students	15.7%	31.6%	31.7%	28.7%	51.4%	72.0%
VOIP	Students	18.8%	16.5%	9.1%	9.2%	25.4%	19.2%
Video Conferencing	Staff	6.1%	5.1%	6.1%	5.9%	6.4%	5.3%
Groupware	Staff	9.8%	14.1%	6.7%	5.7%	9.3%	6.0%
Virtual Worlds	Staff	0.8%	2.6%	1.8%	2.3%	0.6%	1.0%

Table 5: Percentage of staff or students regularly using each of the information technologies and the technologies which show a significant difference in usage between staff and students.

Conclusions

There is evidently a discrepancy in the use of technologies between university staff and students, however the discrepancies are more complex and not all one sided. Students were noted to use the traditional web 2.0 technologies, such as Instant Messaging and Social Networks significantly more than college staff, however students were also noted to be significantly less proficient in the use of office technologies or to be using online collaborative tools. This is inline with the findings of other researches such as the Becta Web 2.0 survey (Luckin, et al 2008) which indicates that although the younger generation have grown up and become familiar with technologies, they are still using them in an individual way and that a challenge now is to integrate more collaborative learning techniques using these technologies.

OUTCOMES

The APT STAIRS project set out to deliver five different demonstrator pilots, but has in fact exceeded this and initiated seven pilots. What has become apparent from the data collated so far and anecdotal evidence from staff and students who have taken part in each of these projects is the positive experience and effectiveness of using Google Docs to collaborate, be it in the context of learning or work. The enthusiasm for these ways of working and the ease which they can be set up without need of specialist technical knowledge has already led those participating on the project to start promoting these ways of working through word of mouth to other colleagues. In addition there have also been significant promotion and dissemination through the more traditional outputs such as conferences and news articles.

CONCLUSIONS

A variety of conclusions can be drawn for the APT STAIRS project:

- Overall use of collaborative online tools is still low and characterised by passive behaviour. However, there are clear indicators that their use is on the increase. One in seven tutors already use these tools, which will have an impact on uptake by students in the mid to long term.
- According to the survey, VLEs are losing market share to media sharing tools with either flat or easily definable hierarchies and permissions, which redefine collaborative processes through simple but effective feedback loops. Online collaborative tools facilitate the trend from tutor-controlled interaction to multi-author ownership of content and tasks.
- Web 2.0 tools provide inspiration to improve tasks and processes, and also provide previously unknown solutions to existing ideas. These tools thus enter the conversation process that leads to knowledge creation (Laurillard, 2002) by guiding and shaping interaction and collaborative exchange.
- Online collaborative tools may not be a universal solution to all problems, but the tools examined in this project are already stable, flexible and versatile enough to address a wide range of issues and contexts. Considering the current pace of development and advance in this area, they already have a level of maturity to make them appealing, useful and beneficial for HE users, although they require a rethink of institutional technology adoption, primarily driven by security concerns.
- The biggest drivers of individual engagement with the tools examined in this project are usability and flexibility, and while functionality may be considered a driver for some purposes as well, a limited feature-set is not seen as a too high a price to pay in the cost-benefit ratio.
- The clear effects should not be underestimated: users seem to be pleased easily by the new tools, thus changing expectations that are not met by the traditional, institution-provided tools. The consequence is a negative attitude to existing services, putting institutional technology strategies under pressure.

IMPLICATIONS

Application of the APT STAIRS model for other initiatives in the Bloomsbury Colleges:

- The 'small-step' model of technology introduction has proved useful and is already being mirrored in other parts of the Bloomsbury Colleges and provides an option for incremental staff and student development in the use of new technologies. The next logical step is to evaluate whether this approach would work as a skill development process for technologies in general, (or whether it is restricted to particular tools), and if so, how these tools can be identified.

Benefits Realisation project at LKL:

- This project focused on researchers as the main target group. The extremely quick uptake of collaborative tools by this group shows that Web 2.0 collaborative technologies and principles are versatile and address the needs of many if not all user groups at a HE institution. Most existing research on Web 2.0 tools appears to focus on selected user groups, so future research and development work should look more holistically at the suitability of such tools across an institution and their impact on changing practices. See Appendix for the Benefits Realisation outcome report.

Institutional uptake:

- Throughout the project, a number of concerns were raised, such as data security and integration with institutional infrastructure. The project showed that cloud computing has a high appeal because of its flexibility and usability, yet there are technical and political issues that institutions need to solve. For many, especially smaller institutions, cloud computing and the consequential outsourcing of services and data are new concepts for many institutions, so guidance on the implications and support for decision-making need to be developed.

Customisation through API developments:

- The cloud computing tools used in this project were generic off-the-shelf products, and some limitations were identified by our user groups. Open APIs allow a high degree of customisation and indeed extension of functionality. Such developments can make these generic products more suitable for HE institutions. Examples from this project are a web search module that also looks up online spreadsheet information (LIDC demonstrator), or descriptions for group functions and web-based batch management tools for Google docs (collected at demonstrator lunch).

Ongoing Institutional Commitment

- There is now a Bloomsbury commitment to the continuation of the APT STAIRS project after funding from JISC comes to an end. This reflects the significant impact of the initial project and the perceived institutional benefits of further project development. As part of this longer term commitment, the APT STAIRS Project Officer is being kept on and employed directly by the RVC. In addition, the BLE Service Manager and other staff from the project team will continue to work together to coordinate new developments in the implementation of collaborative technologies across the Bloomsbury Colleges.

REFERENCES

- Beckman, M. (1990). Collaborative Learning: Preparation for the Workplace and Democracy? *College Teaching*, 38 (4), pp. 128-33.
- Damanpour, F. (1991). Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators. *The Academy of Management Journal*, 34 (3), pp. 555-590.
- Dede, C. (2005). Planning for Neomillennial Learning Styles: Implications for Investments in Technology and Faculty. In D. G. Oblinger & J. L. Oblinger (Eds.), *Educating the Net Generation*. Boulder, Colorado: Educause.
- Fowler, C. and Scott, J. (2007) *The User Innovation and Development Model Guide*. Chimera, University of Essex, Essex.
- Franklin, T. & van Harmelen, M. (2007). *Web 2.0 for content for Learning and Teaching in Higher Education*. Bristol: JISC.
- Glaser, Barney G. (1998) *Doing grounded theory: issues and discussions*. Mill Valley, Ca.: Sociology Press.
- Laurillard, D. (2002). *Rethinking University Teaching: a conversational framework for the effective use of learning technologies*. London: Routledge.
- Luckin, R., Logan, K., Clark, W., Graber, R., Oliver, M. & Mee, A. (2008) "*KS3 and KS4 learners' use of Web 2.0 technologies in and out of school*", Becta Report "Web 2.0 technologies for learning at KS3 and KS4", Available from: http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/web2_technologies_ks3_4.pdf (Accessed 10 Sep, 2008)
- Prensky, M. (2001). Digital Natives, Digital Immigrants. *On The Horizon*, 9 (5), October.

APPENDIXES