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Making it rich and personal: crafting an institutional personal learning environment

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ABSTRACT

Many of the communities interested in learning and teaching technologies within higher education now accept the view that a conception of personal learning environments provides a the most realistic and workable perspective of learners' interactions with and use of technology.

This view may not be reflected in the behaviour of those parts of a university which normally purchase and deploy technology infrastructure. These departments or services are slow to change because they are typically, and understandably, risk-averse; the more so, because the consequences of expensive decisions about infrastructure will stay with the organisation for many years. Furthermore across the broader (less technically or educationally informed) academic community, the awareness of and familiarity with technologies in support of learning may be varied. In this context, work to innovate the learning environment will require considerable team effort and collective commitment.

This paper presents a case study account of institutional processes harnessed to establish a universal personal learning environment fit for the 21st century. The challenges encountered were consequential of our working definition of a learning environment, which went beyond simple implementation. In our experience the requirements became summarised as "its more than a system, it's a mind set". As well as deploying technology 'fit for purpose' we were seeking to create an environment that could play an integral and catalytic part in the university's role of enabling transformative education.

Our ambitions and aspirations were derived from evidence in the literature. We also drew on evidence of recent and current performance in the university; gauged by institutional benchmarking and an extensive student survey. The paper presents and analyses this qualitative and quantitative data. We provide an account and analysis of our progress to achieve change, the methods we used, problems encountered and the decisions we made on the way.

Keywords:

Personal Learning Environments, PLE, eMM Benchmarking, Institutional Change, Higher Education

INTRODUCTION

Contemporary practice in the use of technology has been evolving rapidly in the early years of the 21st century. There has been considerable progress in network technologies, miniaturisation and telephony services. These changes have made an impact on practice and thinking across all types of computer applications ranging from those which are concerned with large-scale organisational and infrastructural issues through to smaller scale personal and mobile applications.

The trend in business and commerce deployment of large-scale computer systems has been to move away from single centralised monolithic architectures towards shared, distributed,

architectures. Individual use of technology for the majority in post-industrial countries has become widespread bringing about greater access to personal computers, laptops, netbooks and mobile devices. For many it has led to behaviours which integrate personal technology use into everyday behaviours, extending across the whole range of individual activities; life, leisure and learning. In less developed countries, mobile technologies and distributed architectures plus new business models have enabled or accelerated technology adoption because of the reduction and management of front-loaded infrastructure costs.

However, while individuals can be agile in their response to technology changes, organisations are typically more constrained by the heritage of past decisions and previous investment. In addition organisations can find that they are required to provide consistency over time (in software, platform or infrastructure) for large numbers of individuals with differing needs and requirements. For the organisation these factors can tend to slow the process of change, so that in a time of rapid technological development and adoption the gap between everyday practice and organisational provision tends to increase.

A growing understanding of these difficulties has emerged at the University of Southampton. It has fired an institutional ambition to provide a replacement for parts of the existing technology infrastructure to be known as the 'Southampton Learning Environment'.

This ambition has been influenced to some extent by contemporary development in the modelling of Personal Learning Environments (PLEs). The context is the increasingly widespread use of the social web, increasing understanding of the applications and affordances of Web 2.0, and effective use in our School of Electronics and Computer Science of 'linked data' for educational and associated administrative applications.

As well as being influenced by external technological developments, the requirements for this system have been derived following extensive analysis of existing practice across the University of Southampton. The university initially engaged in an institution-wide e-learning benchmarking exercise that was followed by a large-scale survey of the student experience of technology.

At the same time a set of colleagues concerned with the management of teaching and learning across the institution participated in a national Higher Education Academy (HEA) Enhancement Academy designed to assist organisational change. This latter initiative helped provide some additional impetus required to developed policy to bring about changes in our current practices associated with the digital learning infrastructure. This academy sponsored innovation and change was led by the university director of technology-enhanced learning (TEL) and formed part of a wider network of changes introduced under an umbrella initiative titled the 'Curriculum Innovation Programme'. Thus prepared and armed with a large amount of information the University of Southampton has begun designing the "Southampton Learning Environment" (SLE) as a virtual, adaptable, and innovative environment fit for the next ten years.

LOCAL CONTEXT

The University of Southampton was an early adopter of technology for learning and teaching based on personal computer networks. Prior to the web in the early 1990s the university made extensive commitment to the use of a locally developed hypertext system called Microcosm. It embarked on an ambitious project to establish a 'campus-wide structure for multimedia learning' (White 1993). Colleagues across the institution developed approaches to resource-based learning which were subsequently incorporated into materials and instructional practice using web-based learning resources and through taught modules delivered by the institutional virtual learning environment (VLE).

Over a ten-year period academics' attitudes to and use of technology across the university were tracked and analysed. It was observed that usage grew alongside national and international

trends which saw an expansion of the ownership of technology and increasing use of the web as a platform for publication (White 2006).

Over this period university-wide commitment to a virtual learning environment was introduced to help overcome differences in technical infrastructure which existed between departments teaching (predominantly) hard, applied subjects in science and engineering compared with departments who were concerned with arts, humanities and the social science.

Using the eLearning Maturity Model

In 2007, motivated by a desire to better understand the impact of changes in practice, the university embarked on an institution-wide exercise to benchmark eLearning practice (White and Davis 2008). The analytical approach was based on Marshall's eLearning Maturity Model (eMM) originally developed in the New Zealand Higher Education system (Marshall and Mitchell 2006).

The eMM method provides a framework for evaluating the current state of maturity of eLearning practices and processes. There are five broad areas for evaluation which are defined by the method outlined below.

- ***Learning:***
  Processes that directly impact on pedagogical aspects of e-learning
- ***Development:***
  Processes surrounding the creation and maintenance of e-learning resources
- ***Support:***
  Processes surrounding the support and operational management of e-learning
- ***Evaluation:***
  Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle
- ***Organisation:***
  Processes associated with institutional planning and management

(Marshall and Mitchell 2006, op cit)

Figure 1 eMM evaluation areas

Within each area there is a set of questions which need to be addressed, and the items of evidence gathered in response to the questions are then evaluated across the following five areas:

- Delivery
- Planning
- Definition
- Management
- Optimisation

When evidence has been gathered in answer to each question, that evidence is then scored on against a five-point rating as show in figure 2. Each score-point is assigned a different colour as is illustrated in the figure.

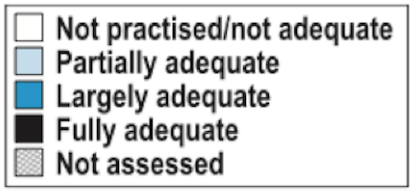

Figure 2: eMM evaluation criteria scale and mapping

When all the ratings under all the headings are combined the output is a 'carpet' where the shading of the area can give a broad understanding of the level of maturity which has been achieved by the institution within a particular evaluation area.

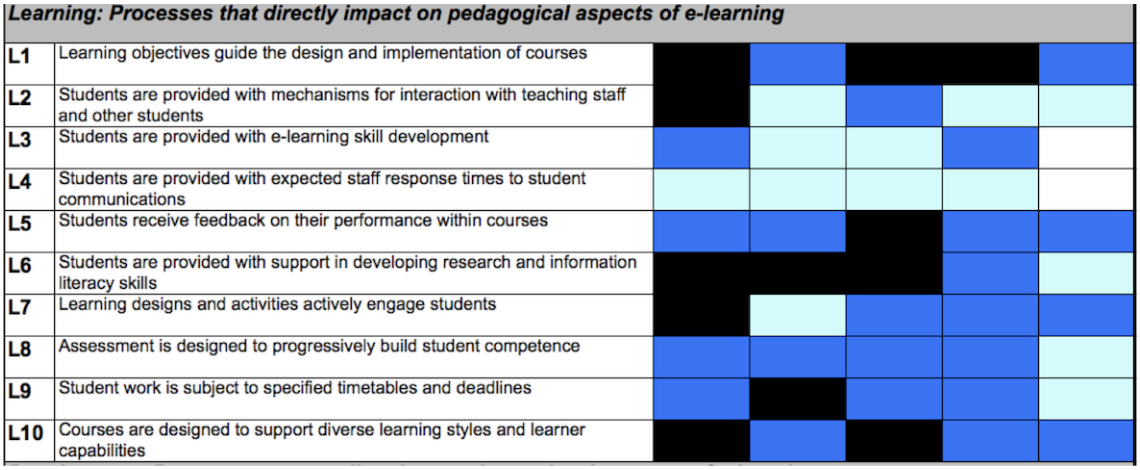

Fig 3: An example of part of an eMM carpet

An example of part of a completed (example) carpet is illustrated in figure 3.

At Southampton, initial planning meetings were convened where colleagues shared their understandings of the various ways in which the practices which were due to be surveyed were organised and managed.

Figure 4 shows how an initial mapping of our e-learning areas of impact and management (which we referred to as Technology Enhanced Learning Practices) was agreed and defined

.At the centre we identified the management core which were concerned with policy, strategy and implementation. Surrounding this we identified:

a) processes which could generate evidence,
b) actors in the eLearning process and
c) the structure and roles which the university had created to deliver this process.

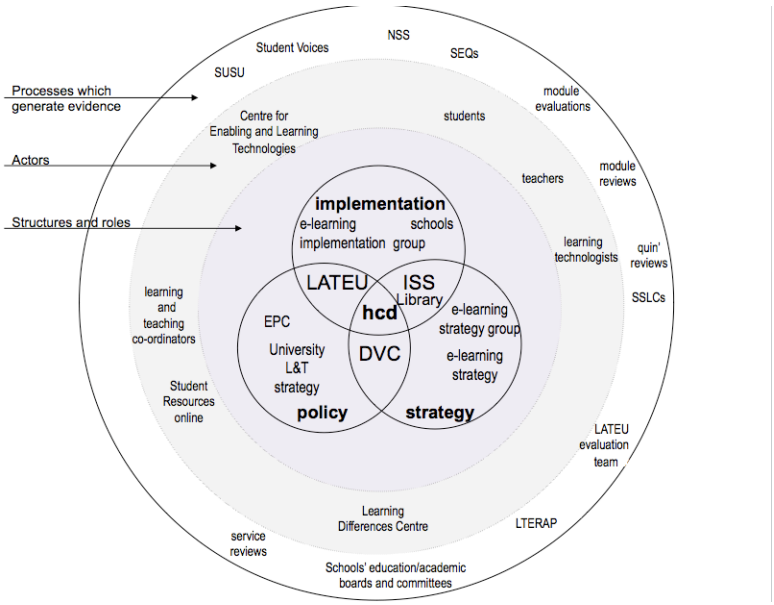

Figure 4. The reference framework for TEL practices across the university

Sources of evidence were identified, and representative academic disciplines were selected where it would be necessary to interview academic and support staff in order to gain detailed insight of current practice. Ways in which data was gathered is indicated in figure 5.

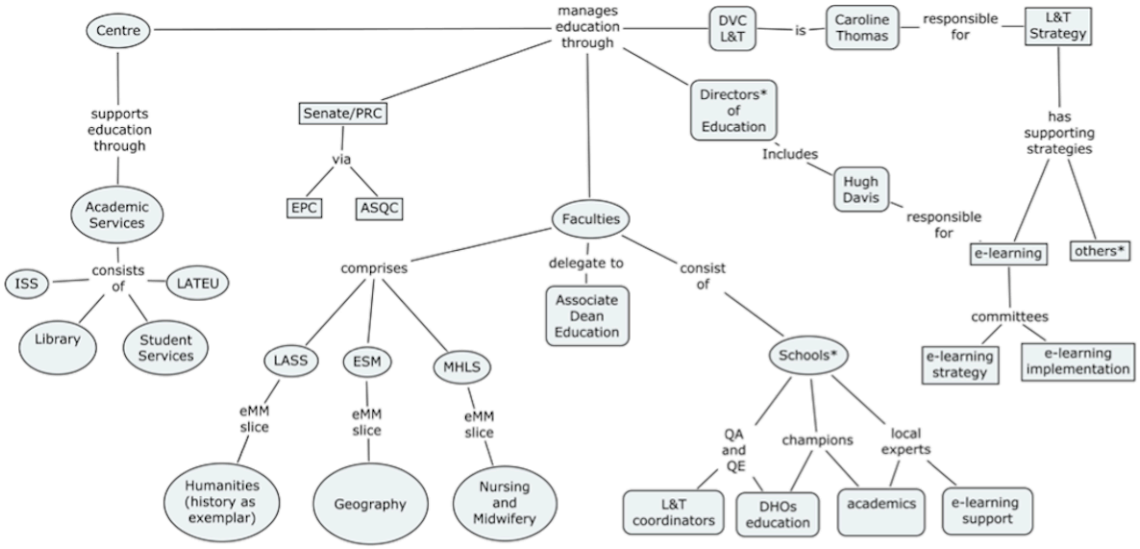

Figure 5: Details of how the data was actually collected across the university.

Running this complex process and gaining an agreed understanding of the component activities of Technology Enhanced Learning at the university had an indirect benefit. An important outcome was achieved in gaining widespread institutional 'buy in' to the possibility of future change in the way we worked with and used technologies for learning. Two years later when we engaged in the activity of establishing the Southampton Learning Environment we were able to draw on the support of many individuals whose understanding of our university's needs had first been established during their participation in the benchmarking activity.

The eMM benchmarking process at Southampton was supported by the UK's HEA academy who co-ordinated a large-scale evaluation programme using a selection of methods to evaluate

eLearning across a range of different institutions. Institutions using like methods were clustered into peer groups. As well as providing an opportunity to develop internal understanding of the 'state of play' for technology enhanced learning, we were able to compare our understandings and learning at Southampton with those of other institutions using the same process. Southampton was clustered with a number of other 'research intensive' universities but we also exchanged our findings with a wider range of institutions representing differing organisational types.

A further important outcome of the benchmarking process was a formalised understanding within the university of a framework for identifying practice and information sources which enabled informed discussion and collaboration across the institution.

When the benchmarking data was collected and assembled as a 'carpet' the evidence was also evaluated by the project steering committee. It examined the evidence against the existing objectives and action points contained in the University's eLearning Strategy. This secondary evaluation process was used to establish a set of further actions which the institution agreed to follow.

An understanding of key processes, actors, structures and roles associated with Technology Enhanced Learning (TEL) in the university was achieved through the definition diagram shown in figure 4 which has already been introduced and explained. Information from this and the detailed information derived from the analysis represented by the Southampton carpet would subsequently play a crucial role in helping to specify the Southampton Learning Environment

FROM PERSONAL TO RICH LEARNING ENVIRONMENTS

A number of factors in addition to analysis of existing practice in our institution derived from the eMM benchmarking, have contributed to the growing awareness of the value of framing our models of learning technologies from a Personal Learning Environment perspective. These factors include:

- The constraints and limitations of virtual learning environments;
- Increasing independently initiated use of technology by learners;
- Observed changes in cost and availability of technology;
- Theoretical modelling of systems and behaviours.

These factors have emerged in a number of ways through external studies and discussions of the role and nature of current and future learning environments and their technological context.

A large body of work had analysed and discussed personal learning environments most often from the perspective of student and teacher. Van Harmelen's view of Personal Learning Environments (Van Harmelen 2006), Atwell's consideration of PLEs as the future of eLearning (Attwell 2007) and the JISC CETIS report (JISC 2007) on Personal Learning Environments mark a clear stage in the development of ideas which had been much discussed across the learning technologies community in previous years. Such formal definitions of Personal Learning Environments largely incorporated (transitory) technological constraints which required integration of tools into third party frameworks.

Alongside the CETIS report, Scott Wilson's visualisation of the components of a PLE have formed a focus for numerous discussions. Other authors who have also been influential include Downes on eLearning 2.0 (Downes 2005), Shaffert and Hilzensauer's discussion of personal learning environments (Shaffert and Hilzensauer 2008).

An earlier contribution which undoubtedly influenced UK thinking took a strong systems perspective (Olivier and Liber 2002). From the pedagogic viewpoint, it is possible to see aspects of the conceptualisation of personal learning environments in the body of work which was published around constructivist education and active learning during the early 1990's, for example the Manifesto for a constructivist education in higher education (Jonassen, Mayes et al. 1993).

Conceptualizations of PLEs, discussions of their relevance, constraints, advantages and roles have continued to occupy journal editions, discussion time, conference space and blogging posts. The approach which we have chosen to take at Southampton is from a perspective of technology affordances (Gaver 1991; Gaver 1996). Our interest is in enabling the learner to operate within a consolidated environment where they intermix their own chosen environments with others which have functions to perform in support of the processes of learning. This has led us to articulate our idealized environment as a rich learning environment discussed within the case study details that follow.

Beyond web 1.0

Discussions and definitions of PLEs frequently incorporate assumptions of the social web. Shirky defines the social web as 'software that supports group interaction', (Shirky 2003). Shortly afterwards, first at conference discussions, and then formally in a published paper, O'Reilly defines web 2.0 and encapsulates his thinking through his meme map (O'Reilly 2005; O'Reilly 2007). In everyday discussion the two concepts of the social web and web 2.0 have become intermingled – understandably since many of the technology affordances of web 2.0 support, or even engender Shirky's concept of the social web. It is worth observing however that social software can be seen to predate web1.0. Social software in action has in effect been operational from the time of bulletin board forums which flourished during the 1980s in forms such as The Well.

From the point of view of the social web, discussions and definitions of personal learning environments frequently include explorations of learners' behaviours mediated by the use of social software. This realization of the social web sees social software fulfilling the requirements of the original conception of the 'read-write web' from Berners-Lee.

The social web has special value because applications such as blogs and wikis, which support writing, publishing, sharing and commenting, can also support construction-based learning activities. The affordances of social web applications which enable and encourage learners to explore ideas through engineered opportunities for reflection and engagement thereby fulfil a core role in the constructivist model. The social web is also of interest from the perspective of an affordance which supports and enables Wenger's creation of and participation in communities of practice (Wenger 1998).

However, while these are undoubtedly educationally useful facets of personal learning environments, from the perspective of the Southampton Learning Environment, the social web is interesting in different ways. Pre-existing use of the social web in particular challenges educational assumptions which it may encounter. Learners' prior or current experience of the social web means that:

- Learners have other virtual identities via the social web which will intersect with their virtual identities in an institutional context
- Learners may well have established (and effective) practices of virtual communications
- Learners may feel critical of, or hostile to institutional environments because of their prior experience of social web applications

These observations are not new and can be found in the existing literature, but do lead us towards our technology affordances-led definition of our rich learning environment. They are observations may be relevant to guiding our educational decisions in terms of how we choose to implement our environment and perhaps what affordances we particularly wish to develop, exploit, or take into account.

The Web 2.0 point of view is more relevant to articulating the technological assumptions which will underpin our conceptions of the Southampton Learning Environment. O'Reilly contrasts the software features which can be used to differentiate web 1.0 – the vanilla web, with Web 2.0. He places the following features at the core of his Web 2.0 meme map

- the web as a platform
- you control your own data
- services not packaged software
- architecture of participation
- cost-effective scalability
- re-mixable data source and data transformations
- software above the level of a single device
- harnessing collective intelligence

(O'Reilly 2005 op cit)

This list provides resonances for our technical collaborators and designers who have an aspiration to "let computers do the tedious stuff". Downes provides an interesting (and prescient) outline on eLearning 2.0 (Downes 2005) which includes references to the web of linked data and semantic technologies which Tiropanis et al have subsequently been able to track coming into use much wider use (Tiropanis, Davis et al. 2009).

Both Downes and O'Reilly anticipate the world of mash-ups and the realization of the potential for sharing, aggregation and interoperability which can come about through the use of standards for data identification and exchange.

The edgeless university

A more over-arching view is presented by Bradwell. When proposing an 'Edgeless University' Bradwell's report for Demos suggests that technology offers a means for institutions to find a collaborative response to external changes such as an economic downturn (Bradwell 2009). His account tracks ways in which technology has already impacted on educational experiences using data collected from a set of interviews and group discussions. In the context of the PLE he anticipates a future with increasing volumes of open content supported by an e-infrastructure for higher education.

This authoritative report commissioned by the provider of key networked services for UK universities and further education colleges envisages a future infrastructure outside of individual institutions, and suggests a context in which future individual planning decisions can reasonably be made.

Taken together, personal learning environments, the social web, Web 2.0, linked data, the semantic web and over-arching changes in the use of technology and commonplace infrastructure communicate an inevitable future of changed technology practice in education. The challenge for institutions is to successfully anticipate the most important future changes.

While continuing to meet the demands of providing day-to-day support for learning, institutions need to set in place mechanisms to update their person

DEFINING THE SOUTHAMPTON LEARNING ENVIRONMENT

During the period described the university purposefully moved away from describing the remit of this work as eLearning in preference using the phrase Technology Enhanced Learning. Throughout the period the work was led by a university director of education who was working with a group of colleagues drawn from across the academic schools and from the professional support services.

In our Benchmarking final report (Jan 2008) we noted that “At the University of Southampton we have reached the stage where technology is ubiquitously used by our students, who have an expectation of interacting online: for admin; for learning and for university life in general. The University has a high quality infrastructure and most modules have an on-line presence”. Bur we were also aware that we needed additional insights into the everyday experience of our infrastructure from our students.

Student survey

The provide this insight, In 2009 we carried out a major survey of the student experience of eLearning (919 students answered 34 multi-part questions), Basic demographic analysis of the data is shown below in tables 1-5

School	**Response**
Chemistry	2
Civil Engineering & Environment	75
ECS	114
Engineering Sciences	30
Geography	38
ISVR	8
Mathematics	13
Ocean & Earth Sciences	30
Physics & Astronomy	13
Biological Sciences	25
Health Sciences	193
Medicine	43
Psychology	26
Art	48
Education	2
Humanities	151
Law	15

Management	23
Social Sciences	71
Other	3

Table 1: Respondents by academic school

The table is ordered by the (then) existing organisation faculty groupings. These also reflect areas with cognate approaches to teaching, and also perhaps distinct characteristics associated with research practices and associated income. Such factors can be influential in establishing the baseline economy of teaching areas, and may also be indicative of differences which exist between teaching practices which are in turn influenced by appropriate or dominant approaches and methods, size of viable student groups, and role of the teaching economy in the financial model.

Year	**Response**
Year 0	14
Year 1	259
Year 2	288
Year 3	210
Year 4	50
Year 5	4
Postgrad.	93

Table 2: Respondents by year of study

The responses were moderately well distributed across the years of study. Our foundation years (year 0) are relatively few in number. Our year 4 students are predominantly MEng students, although some programmes in Mathematics and Modern Languages also offer a fourth year of undergraduate study. Only students of medicine have a fifth year of undergraduate study, and spend most of their time off campus.

Age	**Response**
Under 18	8
18-21	500
22-25	172
26-30	59
31-40	62
Over 40	73

Table 3: Respondents by age group

Our Students' Union supported administering the survey which enabled us to draw representative data from all of the University's 20 schools which were organised in three different faculties. Taken as a whole, the data returned was broadly consistent with other surveys in the sector examining the learners experience of technology; notably the findings of the JISC Learners Experience Programme (Conole, Laat et al. 2006). The data confirmed the

ubiquity of personal technology. Students were asked whether they had exclusive use during term time of any of a range of different types of ICT equipment. Of all respondents, only 25 had none of the options for their exclusive use:

ICT Equipment	Response
Laptop	782
PC	292
PDA/Smart Phone	142
MP3 Player	289
iPod	450
None	25

Table 4: ownership of personal technology

This data was particularly valuable in communicating student use and expectation of technology to colleagues who did not themselves make wide use of technology beyond personal computers for email and admin.

How often do you use the following tools/websites/systems?							
	> once a day	Daily	> once a week	Weekly	Monthly	Have used	Never
Blackboard	143	218	215	122	65	72	82
Online assessments	15	20	51	100	164	342	190
SUSSED Portal	312	252	102	77	54	59	30
Facebook	422	189	101	50	29	36	84
Text Messaging	571	195	71	28	11	17	19
Instant Messaging	215	128	139	75	74	142	126
Skype/VoIP etc.	99	68	82	68	69	194	320
Google	566	204	99	23	6	4	13
Google Scholar	66	57	130	91	104	176	268
Wikipedia	103	103	242	159	123	141	35
YouTube etc.	120	131	216	154	116	119	57
Flickr (or similar)	14	12	30	46	49	201	548
Del.ic.ous / DIgg or other Bookmarking sites	18	15	19	23	17	70	742
Twitter	27	18	22	16	11	70	737

Table 5: Use of Websites and Systems

Three questions gathered qualitative data. These questions were designed to explore barriers and frustrations which learners experienced in their use of technology.

The questions highlighted the range of different problems which might be encountered (see figure 6). The biggest issues were associated with connectivity. In some cases it was possible to infer that additional information and support for users might have prevented some of these problems from arising. In other instances the responses pointed to issues generated by known constraints brought about by details of software licensing and access agreements for services such as electronic journals.

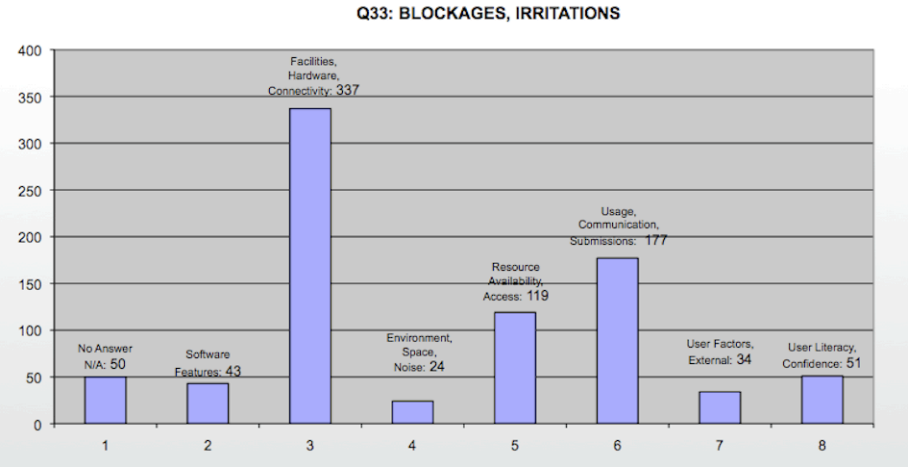

Figure 6: Blockages and irritations encountered by students

This data provided a valuable backdrop to subsequent discussion when we tried to specify the proposed environment. In addition, for our support services (library and computing infrastructure) the survey was invaluable in augmenting official student feedback data on teaching with is routinely collected across the academic year.

Enhancement academy

In parallel to the process of data collection and analysis, senior colleagues directly engaged with the management of teaching and the support of learning at the university agreed to participate in a national enhancement academy.

The enhancement academy engaged participants in a development process. The university team was given a brief to identify proposed changes. A critical friend, a senior (and external academic) with extensive experience of managing change in technology innovation was assigned to work with the management team providing on-going support and consultancy. The role of 'critical friend' is to contribute as a trusted and respected advisor (*friend*) who can challenge the team's decisions in an objective (*critical)* manner. The projects' critical friend guided the development process and attended key meetings contributing to debate as they judged appropriate. The 'critical friend' role provided a level of objectivity beyond the university team, and also created opportunities for expert contributions and advice during critical decision making processes.

The university team created a community of champions, innovators and sponsors (the Southampton Learning Environment team) which worked in conjunction with the already established Technology Enhanced Learning Support and Innovation Group (TEL-SIG). There was some overlap between the two groups which was beneficial in retaining consistency in discussions and decision making. As was noted previously there was also consistency between

this team and many of the individuals involved in establishing the earlier eMM benchmarking activity.

Facilitating understanding

Early meetings of the Southampton Learning Environment team and TEL-SIG were concerned with ensuring that the vision for the proposed environment could address the twin aims of supporting *living and learning*. This perspective would ensure a shared vision for university support services and the academic schools which had been newly defined under the Curriculum Innovation Project.

Different specialisms and expertise contributed to the decision-making process and time was needed to develop understandings of the necessary assumptions which were associated with each specialism. Learning Environment meetings became a forum in which to communicate, share and discuss understandings which gave rise to our observation that: “Its more than a system, it’s a mind-set”. One example of a representation of specialist understanding, which became useful during discussions is the visualization of a Rich Learning Environment which is shown as figure 7.

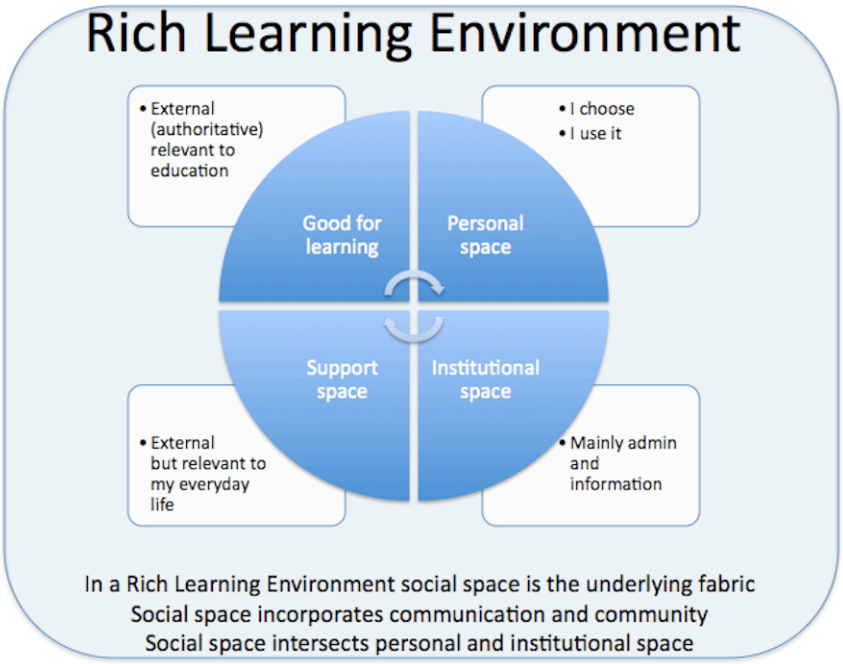

Figure 7: Components of a rich learning environment

Having found the Enhancement Academy process a useful one, it was agreed that the wider learning environment group would also participate in a facilitated residential meeting in the form of a ‘mini’ Enhancement Academy which was organised jointly with the critical friend. The mini academy incorporated a variety of ‘thinking exercises’ the outputs of which were captured into documents and diagrams which have been used to take forward the specification for the Southampton Learning Environment.

The Southampton Learning Environment

We have defined the scope of the Southampton Learning Environment as:

"The Virtual space with which the learner associated with Southampton University is engaged. This definition incorporates the impact of the virtual space on the Physical space utilised by these Learners".

Four fundamental drivers for change were identified. They comprise the desire to:

- support curriculum change and innovation
- address student expectations
- enable the university to remain credible in its support for learning and teaching with a particular desire to be seen to be fluent and innovative in the use of IT
- facilitate the adoption of a University-wide educational style

Working with our colleagues responsible for the technology infrastructure we were able to produce the following summary of our ambitions (figure 8). In this diagram the boxes at the top represent the university corporate applications and existing student facing applications. The box at the bottom represents the student interface, which allows single login access to the student facing applications and to the information that the student may wish to access from the university, such as timetables, assessment records etc.

We have taken an "open data" approach in which all corporate data is now considered open and publically available unless there is a clear reason why this should not be the case. In cases where data is not open (e.g. due to privacy constraints) we have implemented a transparent access system making it clear who has view or change access to the data. In order to protect corporate systems from accidental or deliberate damage or overloading we have implemented a cached layer so that the open data which can be accessed by third party applications (widgets).

We have implemented a "Widget Store" on a similar basis to the Apple AppStore. Widgets can be registered for inclusion in this store after some basic checks to ensure they are not malicious, but the university provides no guarantee as to how useful (or stable) these widgets will be. Typical widgets might be a personal timetable display or a course news feed.

The user can select which widgets they choose to use, and can control to some extent the layout of the screens. They can also choose which sources they choose to aggregate into news feeds. (Unsurprisingly students are much keener to have information about coursework deadlines than they are to hear about prestigious prizes awarded to people they don't know). We thus describe the environment as *personalised* (the information and functionality that is available to the user is based on our knowledge of the user) and *personalisable* (the user can change the layout and choice of widgets).

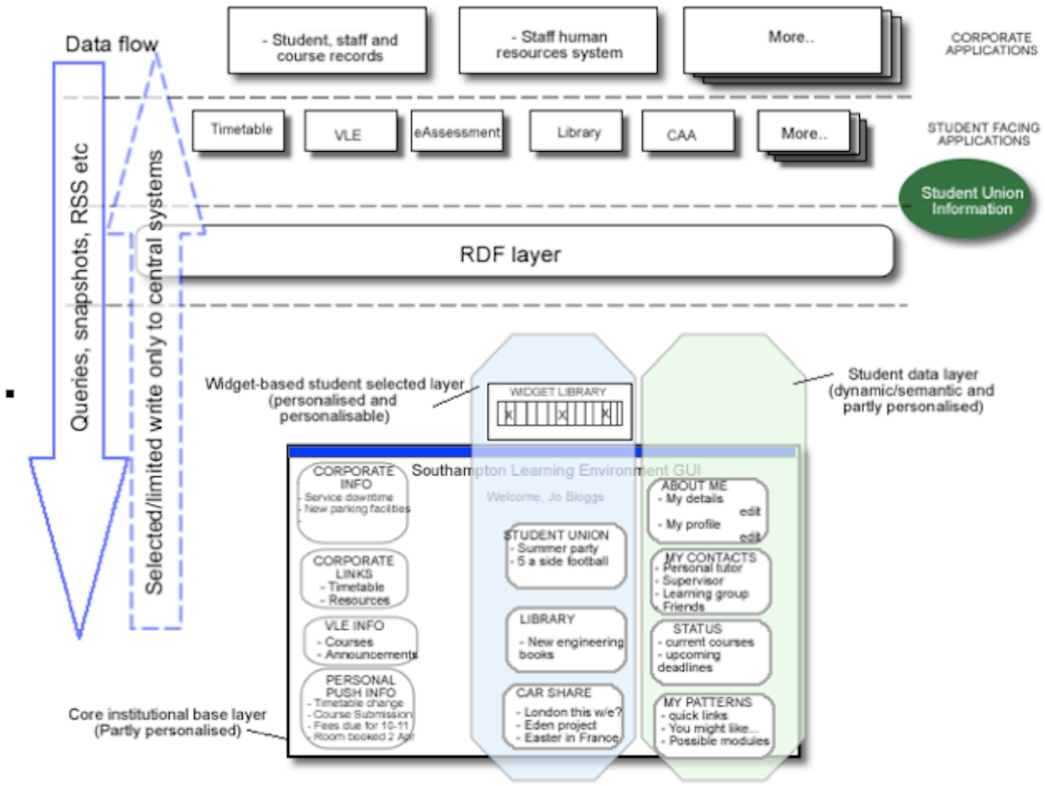

Figure 8: Proposed SLE Architecture showing personalised widget/portal front-end to SLE and the existing student facing applications and enterprise DBs.

It is our long term goal that all processes associated with the support of learning and teaching should be managed on-line, and that all processes associated with learning and teaching should be possible to be organised on-line, so far as is pedagogically desirable. In this sense we are saying that our direction of travel is towards being able to perform (as and when we wish to) as a “Virtual University”. It will provide information and systems to support both learning and living.

Although we refer to the SLE as the “learning environment”, this is to some extent a misnomer. Actually it is the environment within which students and teachers can select the tools they wish to use. Many teachers will continue to use Blackboard (our institutional VLE) as they have invested much effort in doing this. The SLE will allow each teacher to choose the appropriate tools to use with their class – including cloud-based tools. Similarly, students will be able to make their own choices for their personal leaning. It is for this reason in part that we refer to the environment as a mind set.

WHAT HAVE WE GOT?

It is interesting to observe the extent to which our collaborative workings achieve a number of the principles of web 2.0 suggested by O’Reilly’s meme map.

Student feedback from the survey suggested that while we have for some time had reliable systems, they are now becoming rather “long in the tooth”, and showing their age in a Web 2.0 world where everything and everyone is connected.

The vision of the Southampton Learning Environment assumes the web as a platform. Proof of concept from our school of Electronics and Computer Science has demonstrated how this is possible. Other projects around the university demonstrated the range of possible solutions.

The necessary assumptions of an environment which has the complexity to address the agenda of living and learning necessarily looks to services rather than packaged software.

The university is establishing applications which incorporate user generated content. The commitment to services such open repositories for learning is necessarily changing the architecture of our systems. We are designing in aggregation and personalisation, mixing data from a range of sources, and making a commitment to exposing data for reuse whilst preserving a secure core.

CONCLUSIONS AND FUTURE WORK

Many of the systems/applications that currently support the student experience have been in existence for a long time. They were configured (in many cases) from a technical viewpoint with limited appreciation of the evolving pedagogic and student needs. They do a practical job against their original production remits. However, the world has changed.

The process of collaboration supported by the working groups and enhancement academy activities have been powerful catalysts for facilitating communication across different (and sometimes disparate) specialisms.

Different understandings of Personal Learning Environments have provided a starting point which has been used to integrate differing viewpoints, technical and non technical, educational and administrative: our shared 'mind-set'. The university has benefited from long established expertise, but also recognises that the purposeful engagement in developmental activities was crucial for bringing about change. It remains to be seen what the long-term impact of these plans will be, but we look forward to future implementation and further evaluation.

An interesting question that will only be resolved with time is the extent to which an institution can provide a "personal learning" environment. The tool we have initially implemented provides information and functionality that is personalized to the user, and provides the facility for the user to personalise how their environment appears and what tools to include; in reality it a 'personal environment' to support learning. However, our surveys and benchmarking show that we still have a long way to go down the digital literacies agenda before the majority of our students and teaching staff understand the meaning and implications of an environment to support 'personal learning'. It is our intention that the SLE will provide the bridge to those understandings and, like us, will adapt as we learn.

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