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Final Report

Project

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SPLICE

Social Practices, Learning and Interoperability in Connected Environments

Final Project Report

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Table of Contents

Executive Summary

Summarise highlights of the project (one page), including aims/objectives, overall approach, findings, achievements, and conclusions. The full report may include technical terms, but try to keep the executive summary in plain English.

The SPLICE project has identified the ways in which learners, teachers and practitioners in the 'Creative Industries' change and develop their habits with social software. It has produced a set of models for understanding personal and institutional technological change, activity designs for engaging participants in social software, and tools which encourage reflection about personal online habits. In doing this, it provides the sector with clear distinctions concerning the approach to social software, and most importantly, how change in personal practice might be approached from an institutional strategic perspective as well as a pedagogical one.

A key area where SPLICE has direct bearing on institutional policy is on the way social software challenges traditional boundaries between the institution, the workplace and personal life. The possibility of using technology to integrate teacher-led activities with practitioner input has been a key feature, where practitioners in the creative industries have come under the same spotlight of 'change in habit' in terms of their engagement with Social Software. The extent to which engagement with practitioners, and the broader technological engagements of the project has been personally useful or enjoyable to learners outside their learning commitments, and the extent to which new habits continue to be useful as learners continue their lifelong learning journeys, has also been carefully considered on the project. Practitioners have also been learners on the project, and the extent to which they too have changed their technological habits has been assessed.

The means by which the models produced by SPLICE have been constructed have involved innovation in project management and evaluation. Continual modelling of the project outcomes as the project progressed, together with an agile and iterative approach to project management, grounded in the techniques of Realistic Evaluation have helped identify mechanisms of change in habit and the contexts within which they work.

SPLICE has dealt with difficult problems. The difficulty of these problems is reflected in the difficulty of the challenges that institutions face in managing themselves. With this emphasis on mechanisms and their contexts, the intention is that the outcomes of SPLICE should be applicable and useful across a wide variety of educational situations, from classroom practice to institutional change management. As this transformed technological environment for education matures, understanding of the mechanisms will evolve with it. With social technology still very new, SPLICE has made a contribution to the process of gradually revealing an understanding of the challenges that lie ahead.

Background

Summarise the background to the project (and how it builds on previous work) and the need it for it (and why it's important).

There may little benefit in developing new educational technologies if nobody develops the habit to use them (beyond the small group of people who conceived them). The experience of encouraging users to use new technology - trying to raise technological capacity amongst learners or teachers - tells us that until users see "what's in it for me?", existing habits are hard to change. Yet individuals do change their technological habits over time, sometimes as a result of engagement with institutional culture, or within the personal and cultural environment outside the institution. As institutions are faced with societal demands to become ever more flexible, agile and responsive to their learners and an increasingly global educational marketplace, raising the technological capacity of staff and reorganising provision so that learners have access to the most effective learning opportunities become key strategic issues. Learners too are faced with similar challenges as they seek to make their way in the world. The principle theme behind SPLICE is that technological habit, particularly the habits of online communication through social media, lie at the heart of any solution to meet these challenges, both personally for learners and institutionally. Inculcating habits is difficult. SPLICE aims to help by mapping-out the challenges from a variety of perspectives, from the personal, to the pedagogical, to the strategic, and through using these maps, suggesting some ways forward.

SPLICE built on two previous projects coordinated from the University of Bolton: MANSLE (Manchester Self-Directed Learning Environments) (2002-2004) and the Personal Learning Environment (PLE) (2003-2005) project. MANSLE, an e-portfolio-based Lifelong Learning project, evolved in its extension phase into using social software for learners to engage in reflection and online discussion with individuals working in relevant industries, or with each other, or with learners in other institutions. Running concurrently with the extension phase of MANSLE, the PLE project sought to identify ways in which learners might take control of their own technology (rather than relying on institutional technology), coordinating services to manage the complexities of their learning and their everyday lives. A key output of the PLE was a model of the Learner which was based on the Viable System Model (itself a tool which had previously been used to characterise the complexity management performed by a Virtual Learning Environment). SPLICE was conceived as the direct result of:

a. Wanting to test the PLE model, and to ascertain the real potential of personal learning environments;
b. Wanting to continue and develop teaching and learning practices from the extension phase of MANSLE which showed promise.

The SPLICE team comprised three institutions who had been involved in MANSLE (City College, Cheadle and Marple College and University Centre, Oldham). A relationship between Bolton and Coleg Harlech had built up over previous years, and a partnership accord had recently been signed, which meant that a number of Harlech students would progress onto Bolton courses. Thus rich working relationships had been built up between individuals in the different partner institutions of the project. This relationship provided an opportunity to examine learner progression and how personal technological practices developed as learners moved from one institution to another.

Thus, the key question of SPLICE has been to investigate the acquisition of habits to engage with social software and experiment with new online tools and services. The emphasis on habit derived from frustrations which emerged from the MANSLE project in encouraging learners or staff to engage meaningfully with new technologies and overcome barriers of implementation, etc. SPLICE was intended to be an antidote to the technology-centric approach to lifelong learning which focused on the implementation of institutional systems for e-portfolio. Ironically, SPLICE was to produce its own 'institutional technology' in 'TrackMe', although in hindsight, the issues of dealing with this confirm some of the initial presuppositions of the project. These presuppositions, drawn partly from work on the PLE, can be summarised:

a. Technological engagement occurs when the individual is disposed towards a set of practices with a technology;
b. Changing technological disposition (or habit) is hard but clearly evident in the emerging new practices of users;
c. Lifelong learning entails the empowerment of the learner through technology to give increased access to learning opportunities;
d. Social technology breaks down the barriers between the educational institution and the workplace.

SPLICE focuses on the problem of change. To deal with this complex problem, SPLICE was intended to identify 'mechanisms' of change of habit in individuals, and the particular learning contexts – including learning activities, infrastructure, and engagements with peers and teachers – which are most effective in producing that change. The means by which mechanisms would be described were 'models', taking the PLE model as a starting point.

This focus on modelling, change and 'mechanisms' meant that SPLICE had to be methodologically innovative. From experience of the Lifelong Learning projects, it was clear that agile and iterative project methodologies were preferable to rigid pre-determined models. However, with such a flexible approach, how was the project to be evaluated? If a variety of different activities were conducted across the different partners, how were the results of these activities to be cumulated in a common project outcomes? In its project design, SPLICE has to deal with these problems, and the methodological approaches (which themselves led to new technical developments) are a key output of the project.

Ultimately, the aim of SPLICE was not to attempt to provide 'universal' solutions to the problems it engaged in: where solutions were found, they were often dependent on local conditions. It was instead to provide a framework where teachers could do what was appropriate in each circumstance, reporting back the nature of their interventions and the results. With its modelling methodology, these results could then be compared against the dynamic models which were emerging alongside and the models tested and refined for their explanatory and predictive power. What has emerged is a set of dynamic models and activity designs which give a key insight into the ways in which individuals change their technological habits, and the things institutions might do to make change more probable.

Aims and Objectives

List the aim and objectives agreed at the start of the project, and note if they changed during the project.

SPLICE has evolved, even between the bid process and the initial project plan. The initial bid stated that the aim of SPLICE was:

"To open technological opportunities to teachers and learners which transcend organisational barriers. SPLICE is concerned with tracing the development of technological habits within a group of learners progressing from FE to HE over the life of the project."

In the main project plan, the objectives of SPLICE are stated as:

1. Create a social network which encompasses teachers, learners and practitioners in the creative industries.
2. To find ways to exploiting the network as a resource to create a more learner-driven approach to education.
3. To develop a specific technology [TrackMe] as a scaffold to encourage the development of technological habit.
4. To identify the key social and educational mechanisms at work within the social network – particularly those mechanisms which lead to greater learner self-efficacy.
5. To identify the leverage points within the conventional educational system from which organisation change might emerge.

The main point of evolution on the project concerned the development of TrackMe, which early-on in the project, looked to be a problematic idea. The decisions that were taken around this are documented in this report. The main objectives of SPLICE in terms of creating a social network, creating opportunities for learner-driven education, identifying mechanisms and leverage points have been achieved.

In the final analysis, these outcomes are:

1. The Social network, and many other instances of usage of social software in the classroom
2. Finding 'Ways of exploiting' the network as a resource has emerged as concrete activity designs for the establishment and change of technological habit.
3. TrackMe has been developed, with some enhancements which were not originally envisaged (e.g. hooks into social software services) and some reconsideration of the ways in which it might be used.
4. Models have been produced helping to explain the responses of learners, teachers and administrators to social software
5. SPLICE has led to key recommendations for strategy in dealing with social software, with specific instances recorded in Harlech and Bolton.

Methodology

Summarise the overall approach taken and why this approach was chosen over other options considered. Then describe the methodology in more detail. Depending on the project, this might include the methodology for research you carried out, technical design or development, evaluation, etc. Finally, note any specific issues that had to be addressed by the methodology, e.g. standards, interoperability, scalability, etc.

Project Management Methodology

The SPLICE project was designed as an iterative and agile project. The intention was to ensure that the project plan was as flexible as possible, since many of the project outcomes were unforseeable at the project outset. The stated outcomes of the project therefore consisted of models, recommendations, software and activity designs. Whatever happened during the course of the project, these outcomes would be produced. However the key criteria in the design of the project was that the project activities should be continually:

a. Revelevant to current institutional realities
b. Flexible to adapt to individual institutional contexts
c. Flexible to individual teaching styles.

With an approach emphasising the production of models, the idea was to maximise the variety of activity on the project so as to produce as rich and inclusive a model as possible.

The basic approach was drawn from Realistic Evaluation. The priority with Realistic Evaluation is the exploration of possible mechanisms for the production of phenomena. This entailed:

a. Recording project outcomes
b. Modeling project outcomes and the contexts within which those outcomes are observed.
c. Planning new interventions based on the project outcomes.

Methods used to perform a included:

a. Semi-structured and structured interviews based on project models
b. Data from engagement through the social network established
c. Informal Ethnographic experiences from project stakeholders

Methods used to perform b included:

a. The use of the Viable System Model (drawn from work on the JISC PLE project (Johnson and Liber, 2008)) to model the ways in which teachers and learners managed the complexity of their lives
b. The use of models drawn from communications theory and other cybernetic theories
c. The identification of stakeholder theories about the project.

Plans for new interventions occurred at 3-4 monthly intervals. These were based on the previous project experiences.

Technical Design, Development and Implementation Methodology

Software developed for the project included a personal tracking service, TrackMe. The software was written in XUL using the Mozilla interface. It was to be developed using an iterative methodology. Although it was originally intended that this should be

server-based, it was eventually decided that this was not necessary since users could share data by email.

One of the advantages of an iterative methodology is that software designs which are ill-conceived are quickly identified before too much work has been done! The original design specification of TrackMe indicated that learners should be able to identify the activities they were doing by tagging an activity and then recording online subsequent activities. In the early stages of development it became apparent that it would be difficult to encourage learners (and some teachers) to use TrackMe and tag their current activities. Beyond initial curiosity, learners were less than comfortable in having their practices tracked in this way. Partly because of this, and partly because of difficulties with the Mozilla XUL programming environment, changes to the specification were made which linked the functionality of TrackMe to other activities on the project, including the use of Delicious and Twitter. This was done instead of trying to offer increased security controls to users. It didn't look like increased security or user control would encourage more users to use it – in its basic form, TrackMe's data, including the user's tags and the sites visited, was always in the user's control, and could be edited at any time.

If TrackMe wasn't going to be a tool that users would use on regular basis, it could at least be a tool which raised questions and issues about the use of social software. These changes meant that development focus was shifted to emphasising the 'personal analytics' side of the software, and connectivity with other tools (notably the TouchGraph Google browser). As a result, TrackMe formed part of the Web2.0 'exhortation' activity detailed below.

Evaluation Methodology

The value of SPLICE lies in empowering institutions with effective models of themselves so that they can take more control over their operations. The evaluation methodology and the project approach have been geared around this aim.

As an iterative project which involved a wide range of practice amongst different stakeholders, SPLICE required an approach to evaluation which went beyond a simple evaluation formula for the whole project based on testing a particular intervention. SPLICE required a technique for identifying value which could embrace a wide variety of different interventions, and account for the varying circumstances within which interventions were conducted. It is for this reason that we chose to use Realistic Evaluation. The adoption of this approach, and the innovation that surrounds it, is one of the key features of the project.

Our Realistic Evaluation approach was constructed around a process of continual model-building. The models we worked with were:

a. Models of the learner
b. Models of the teacher
c. Models of the Educational Institution

In the initial stages of the project, models around a. and b. predominated. As the project progressed, it became clear that models of the institution were increasingly relevant to an understanding of a. and b.

Each of these models was constructed against data gathered from project interventions. For example, as the social network for the project was established, the diversity of engagement by different learners needed some form of explanation. To this end, a model was produced to explain the diversity of engagement.

This model was then used to identify the next phase of intervention. The results of that intervention were then used to refine (or reject) the model that had been used up until that point. As successful and unsuccessful interventions were identified in the project, new models and refinements of existing models were required to explain them and predict future outcomes.

The process was one of evolving refinement of models based on the reality of experiences 'on the ground'. It culminated in an 'evaluation day' where project stakeholders were asked to contribute their own theories and explanations for the changes that had occurred on the project. This was a further process of validating the models that had been produced.

Ultimately, the position aimed for at the end of the project is to be able to say: "if an institutions implements the interventions we have identified in the project, these are the things that are likely to happen (and this is why...)"

Implementation

Describe how you planned and implemented the project work and the activities it involved. Depending on the project, this might cover technical development, processes, how you conducted user studies, etc. Include any problems or issues that arose and how you handled them, where readers can learn from your experience. Tell the story of what you did rather than listing workpackages.

The iterations of the project focused on different aspects of the use of social software and were driven by the continual modelling of project outcomes as they arose. The results of these iterations were documented in academic papers and presentations to conferences and the interim results of the project discussed by the broader academic community.

Phase 1 – Implementation of Social Network, Launch events, Baseline data gathering.

The first phase of the project was focused on Coleg Harlech, since it was these students who would eventually progress in the second year of the project. Since SPLICE was about change, some sort of baseline data gathering was necessary. This involved baseline questionnaires which were conducted to establish the level of social software engagement and general disposition towards the use of technology. From the results of these questionnaires, key student cases were identified who would be followed-up over the course of the project. An initial modelling process was conducted with these individuals against the PLE Viable System Model and an intervention plan conceived which involved introducing the various technologies of the project.

Phase 2 – Focus on Creativity and Technology, Inter-disciplinary working, Peer-activities

As a result of the first intervention phase, creativity was identified as a key driver for engagement with technology. To investigate this further, measures were taken in each institution to increase interdisciplinary engagement. In Coleg Harlech, this involved the engagement by Multimedia students in Art classes and vice-versa. This was highly successful.

In line with the project plan, the emerging theories about the importance of creativity were to be tested in the other partners. Much of what the creativity initiative produced

was peer engagement and interdisciplinary engagement. In City College, this involved the peer engagement with outside practitioners with the SPLICE project. In Cheadle and Marple 6th form college, this involved the engagement with peer assessment techniques. In Oldham University Centre, the creativity agenda was pursued through engagement with Second Life.

An early indicator of some of the difficulties of social software area arose in the requirement that a project blog be kept. Project participants found it difficult to contribute to this on a regular basis (despite it being a requirement of the project). It was clear that the reasons for this reticence were related to the reasons for the more general reticence of stakeholders to engage in social software. These would be explored in more depth in the project evaluation. In the meantime, private records were instead kept to be shared at the end of the project.

Phase 3 – 'Walled gardens', assessment coercion, curriculum transformation

Despite the success of some of the 'creative' interventions, the open-ness of the SPLICE network was seen to be a problem by many learners in Harlech, and it became clear that students were more comfortable engaging with their peers, rather than with a wider audience. This outcome was also reflected in what was happening in the other partner institutions – particularly with the success of the peer assessment at Cheadle and Marple. Thus, it was identified that the best way of engaging learners with the technology was through establishing closed peer-assessment groups. This practice, first used in City College, Manchester, was carried forward into Harlech.

Clearly, because this practice was tied to assessment, learners had little choice as to engage with it (it was a coercive intervention). Naturally, therefore, the result was that a high proportion of students used the technology, although there was a question mark over the extent to which their engagement would be sustained beyond the assessment period.

As part of the drive on assessment design, the curriculum at Coleg Harlech was redesigned to take account of some of the outcomes of SPLICE. The Multimedia and Art cohorts were combined in a common 'core' module, where the issues of social networking and communication were dealt with. This proved very successful.

Phase 4 – Activity Design and Teacher Modelling

At this stage in the project it was clear that some learners (but not many) and practitioners had radically changed their practice. On analysis, the causal factor for this change was engagement with inspiring individuals outside the institutions, who were brought in as part of the engagement with Creative Industry practitioners. At the same time, practices with Twitter (which had played a major role in the project from the beginning) were becoming mainstream.

Comments from learners reflected (about one of the practitioners) that "she was so inspirational – I could do that!". In essence, this highlighted the importance of 'models of practice' and the transformative effect that those models could have. Importantly, we realised that 'models of practice' were not always traditional teachers, and that this realisation carried organisational implications in terms of how institutions could maintain their links with industrial practitioners (outside a project which was focusing on the issue!). Using outside practitioners as models for learners continued with particular success in City College.

Phase 5 – Finalising of Models, application of models to other domains, Strategic implications
The finalisation of SPLICE models was conducted through engaging with the SPLICE evaluation day which was intended as a way of driving the Realistiic Evaluation practice. The day led to the finalisation of the models that are discussed here.

As the models were finalised, opportunities arose for them to be exploited in other institutional work. For example, through experiences in Harlech, it was clear that the increased transparency of communication brought about through engagement with technology were beneficial to institutions in that they raised the level of pedagogical discussion within institutions and led to development of curricula and teaching practice. The University of Bolton was at this time devising its e-strategy, and the implications of this work on SPLICE fed into the strategy in highlighting transparency of practice as a key organisational goal in the implementation of technology. The importance of modelling of practice, and the vicarious nature of the learning of new technological habits, both of which had emerged in the project, led to strategic objectives for establishing different types of communities of practice within the institution to raise capacity with technology in a 'viral' way, rather than simply 'exhorting' the use of technology to staff (which is the predominant mode at present).

Outputs and Results

Explain the end result of the project work in an objective way. Depending on the project, it might include research results, findings, evaluation results, data, etc. If the project created something tangible like content, a portal, or software, describe it. Engage the reader, and avoid a long list of deliverables.

Outputs of the project range from software, activity designs and the SPLICE models. Ongoing throughout the project has been an engagement with the academic community, and academic outputs are listed in Appendix 1.

The evaluation of the project links the models produced with data collected from learners and other stakeholders, both long-term reflections by learners who progressed into HE, and short-term reflections by learners on specific learning activities. In addition, the results of the SPLICE evaluation day identified underlying mechanisms and issues which played a key role in the construction of the models.

Software

TrackMe is a Tracking and Personal Analytics tool for Mozilla firefox. It combines with services from Twitter, Delicious and Google to provide an integrated way of viewing the activities of users, giving a view on the personal online habits of learners and ways in which those habits may be developed. It is documented by Johnson and Sherlock elsewhere (2008; 2009).

SPLICEMind is an extension of the FreeMind Mind-Mapping tool which captures input into mind-maps from the Twitter service. SPLICE used this as a tool in the Realistic Evaluation process where large-scale collaborative questioning could be conducted, and issues 'drilled into' in some depth. Its role in the evaluation process has been discussed in more detail elsewhere (Johnson, 2009)

The feedback from the use of this tool was very positive – although it is interesting to note that it is not the tool alone which is popular, but the collaborative learning activity as a whole.

InnerState models were developed to demonstrate the mechanisms identified by SPLICE. Development of InnerState was funded through another project running concurrently to SPLICE, but the models of the person and personal complexity were used within the SPLICE project evaluation as a way of explaining the change processes in habit that were identified through SPLICE.

Activity Designs

Activity designs for changing habit were produced for the following activities. These activities can be related to the intervention model of SPLICE: Many learning activities were related to assessment activities, and were therefore coercive in nature (i.e. learners didn't have a choice but to engage); other activities were more disruptive (e.g. posting videos from experts online, using Delicious collaboratively); some activities, particularly presentations about the project, or about social software, were exhortative.

1. Collaborative Research activities (Disruption)

Learners were helped to carry out research by sharing their findings with others engaged on the same task using the online tool provided by del.icio.us. The activity was conducted in a number of settings – most successfully with learners who were research possible choices of university to apply to.

Learners could share their web based research findings with other users thus allowing fast transfer of useful sites between learners working on the same task. Using this technique it is possible to set up a localized learning community (a group of people with the same learning objectives and a willingness to share their skills and knowledge) for a short term project.

2. Recording Personal Learning Experiences (Coercion)

Learners recorded their daily activities with regard to the course they were following. In these private blogs (diaries) learners included details of websites they had visited, books and periodicals they had accessed and skills they had acquired. The benefits to the learners were an improvement in the accuracy of the bibliographies they produce for their work and their ability to 'remember' that they had done something before and search the diary to remind themselves of how they had carried out that particular activity.

3. Time Management (Coercion)

This activity took a variety of forms. Basically, it involved learners sharing their learning plans online. In the University of Bolton, this was formally achieved through the sharing of 'learning contracts'. In FE, the technique drew on the WALT and WILF techniques more commonly found in the Primary sector of UK education but equally applicable at all levels. WALT and WILF is a learner-friendly was of helping learners identify their aims and objectives for a lesson.

WALT – What Am I going to Learn Today – is the part the learners find hardest but they are able to relate to "What am I going to do today", which unfortunately does not give such a memorable acronym.

WILF – What I'm Looking For – the learners grasp quickly and are able to give coherent, sensible, measurable targets that could be used to identify if the session had been a success.

Social technologies were used to articulate these plans. Initially, as with most new teachers, the learners will set themselves too much to do in a session. However by going back and analysing their diaries they become more aware of what is realistic for them to achieve. Surprisingly very few learners set their expectations below those the teacher would have set and many set themselves difficult challenges that they felt obliged to achieve.

Engagement with the technology provided an excellent vehicle for organising and sharing their ideas.

4. Brainstorming (Coercion)

A Ning site was used to allow the teacher to introduce a topic to which learners could then add their thoughts whenever and wherever they are as long as they have an internet connection available. This brainstorming happens in a way that learners feel comfortable with. It allows the shy learner to participate in a way that sitting round a table in large or small groups does not allow. This method allows all ideas to appear in the brainstorm with a more equal weighting.

5. Mind Mapping (combining Twitter feeds with software) (Disruption/Coercion)

The principle activity of the project evaluation was similar to the classroom-based brainstorming activity. The twitter activity captured participant reflections, but it also offered must faster feedback from other participants than other means of capturing data. This meant that the 'delving into' an issue became possible with a large group of learners sharing their thoughts, with the overall questioning being directed by the teacher. With the mindmap presentation, participants were able to map "how they got to talking about x", which became important as the discussion got deeper. Within the evaluation day, this deepening was driven by the question "if you think x is happening, how does it work?"

6. Peer Support (Coercion)

Videos of skills can be useful ways for learners to pass skills between themselves or to provide video evidence of their skills. The teacher can be a learner in this context as the students often have appropriate skills that the teacher doesn't possess. Video recordings of the skills of teachers, learner of outside experts gave other learners and teachers an insight in their practices. By posting these on a social forum (Ning) everybody else could access these videos which in many cases were directly relevant to their course needs.

7. Peer Evaluation (Coercion)

One of the big successes of the Ning technology used on the project was in the use of Peer assessment. This was piloted both in Harlech and in Cheadle and Marple. The approach also allows learners to support fellow learners even when they are not physically together in the same room. To do this and remove any of the public concerns about social networking it was necessary to set up a closed Ning group (www.ning.com) which allows learners to upload their work and comment constructively on the work of other learners. A closed Ning group only allows learners

to join the group by invitation and hence it is possible to ensure that only genuine learners are members. To join the group learners will have to provide an e-mail address (if necessary to ensure anonymity they can create one for use solely in the ning area) to the member of staff who is the administrator of the Ning site who then invites them to join the group. In this way the administrator knows who has made the comment but the other learners do not unless the learner wants to make their e-mail address known to the group. This allows learners to make anonymous comments (a requirement to get the quieter members of the group involved) but stops derogatory comments (the administrator can remove the learner from the Ning group.

From the initial comments provided by the learners it is obvious that they were comfortable with what is effectively assessing the other learners' work. With more and more universities using peer assessment as part of degree assessment it seems sensible to start to train our learners in the art of assessing their work themselves against grading criteria. This approach allows learners to evaluate the work of and provide support for other learners. It also allows the learners to record their learning and pass this learning on to other learners within the localized community.

8. Activities involving bringing in outside experts into the Learning Environment (Disruption)

Technology can help with the organisational issues of bringing in an outside 'expert' to engage with the learners. Most experts have not been trained in classroom management and make the mistake of expecting the learners to hang on their every word. The technology helped with the availability of experts and, through use of video interviewing, avoided some of the classroom management issues of bringing in outside experts to talk (particular in FE). In City College, and within the SPLICE network itself, this means of engaging experts was highly successful.

9. Introduction to importance of Web2.0 involving TrackMe (Exhortation)

Saying why Web2.0 is important for reasons that are more than simply "because it's there" is an important step to encouraging learners and teachers to take on new practices which at first might seem quite challenging to them. The TrackMe tool allows the importance of Web2.0 technology to be demonstrated through the various tools and services that have been integrated with it.

Through using TrackMe a clear link between personal technological habit and 'social connectedness' (demonstrated through the integration of the Touchgraph Google browser) could be demonstrated in class, with participation from the learners as they sought to investigate their own online connectedness.

The analytics aspect of TrackMe raised questions about "what do I change?" and "how can I increase my social connectedness?", with a demonstrable link between engaging in social software services (e.g. Twitter) and an increase in connectedness. Overall, the use of TrackMe in this way encouraged learners to think more deeply about the issues around Web2.0, and how technology is an important dimension for them making their way through the world.

Models Resulting from the Project

The models summarised here are the end result of the evaluation process which saw a number of different models examined. The ongoing evaluation process and the evaluation day contributed to a final 'project' version of these models which were

then presented to various stakeholders as ways of explaining some of the outcomes of the project. Three of the models have been presented and discussed in more detail with the academic community in Journal and conference presentations, and this process is ongoing. In such a process, and within the Realistic Evaluation methodology as a whole, there is never a completely 'final' definition. But the evidence for the models lies in their ongoing practical application.

The models articulate a way of making distinctions about social software, and change in technological habit. Some of these distinctions have already been used in other contexts, including institutional strategy, and so will be further tested in time (although they have already shown themselves to be useful in articulating strategies). The models draw on other existing theories and models, drawn from cybernetics, sociology and previous JISC work on the Personal Learning Environment.

1. The "What's in it for me?" Model

This model concerns understanding what happens when individuals do drastically change their habit. Understanding when the individual sees "What's in it for me" is fundamental to understanding why habits change and are sustained, or not. Detailed work concerning this model has been discussed and published elsewhere (Johnson and Sherlock, 2008; 2009).

The model draws on the Transformational Model of Social Activity (TMSA) of Bhaskar and the communications theory of Niklas Luhmann. In its basic form, the TMSA articulates that individuals 'reproduce and transform' the social structures they exist within, and that these in turn condition the behaviour of the individuals. The means by which this reproduction and transformation occurs is communicative acts.

In the SPLICE form, we argue that there is a point at which the social structures individual reproduce and transform are online, and that the conditioning that those online social structures produce necessitates further online engagement. At this point, the individual 'sees' everyone else engaging in online activity, and considers that they must do the same.

2. The "Personal Habit" Model

The Personal Habit Model draws on previously published work on the Personal Learning Environment (Johnson and Liber, 2008). To get to the stage of change in habit, there must be a mechanism of change in the individual, and this mechanism responds to various interventions conducted by teachers, friends, and peers. This more specifically 'habitual' model has been articulated at conference presentations (Johnson et al., 2008; Edwards and Hall, 2008) and will be published in more detail shortly.

The personal habit model must explain the diversity of individual engagement with technology, and different responses to interventions (for example, one person might find a presentation 'transformative', and another 'irrelevant').
The personal habit model is based on the Viable System Model presentation of the learner used for the Personal Learning Environment.

The VSM presents a focus on individual difference as concerning the differences in the ways individuals organise themselves. Thus:

a. Individuals are different because they organise themselves in different ways

b. Changing the way we organise ourselves changes our behaviour (including online behaviour)

The categories of personal organisation are:
a. Personal identity
b. Personal world-view and future-gazing
c. Operational organisation and personal synergising
d. Habitual organisation, instinctive reactions

These categories were mapped onto the regulating systems Beer identifies in the Viable System Model, and which were specified in work on the JISC PLE project.

3. The "Intervention" Model

The Personal Habit model was used as a way of thinking about the different ways learners and teachers organised themselves on the project – particularly with technology. Making judgements about 'how individuals were' according to the VSM naturally involved intervening with those individuals in various ways (e.g. asking them questions, etc), and any judgement was necessarily relative to the intervention. Thus distinctions about personal organisation were dependent on distinctions about the interventions used with those individuals.

The intervention model has been presented as a way of making distinctions about the different interventions that teachers make in trying to encourage change (Johnson, Hall and Edwards, 2008). Thus, the Intervention Model makes a distinction between three categories of intervention:
a. Exhortation – presentations concerning the "way things are changing", "why social software is important", "why we must all change", etc.
b. Coercion – initiatives in assessment (for learners) or policy (for teachers) which impose some change in practice and engagement with technology
c. Disruption – initiatives which interrupt current practice with suggestions of 'cool' new practices, techniques and technologies. Creative interventions have been identified as being particularly disruptive on the project (Johnson et al., 2008)

These distinctions relate to the categories b, c and d in the Personal Habit model.

The intervention model and the Personal Habit model were used in parallel as a way of understanding the change processes of individuals.

4. The "Positioning" Model

The Positioning Model will be discussed in more detail in forthcoming publications. It reflects the ways in which teachers relate to their learners and model practice for them. It is a way of looking at not only the processing of modelling, but at the deeper issues of how teachers 'reveal their understanding' through designing learning activities, and how/why/when learners are 'inspired' by them. SPLICE identified that the nature of the relationship between teachers and learners, and particularly whether the teacher 'lived' 'Web2.0' was the crucial factor in the effectiveness of their interventions. The Positioning model draws on Harré's 'Positioning Theory' which makes a distinction between three levels of 'the self' and how the relationship between teachers and learners can be classified irrespective of the sorts of interventions that are conducted between them. In SPLICE it is seen as working with the Intervention Model and the Personal Habit model, as teachers not only engage in

interventions to encourage learners to change (exhortation, coercion, disruption), but (in the best instances) *read* where the learners are coming from, and act accordingly.

The positioning Model deals with the instance that a successful intervention, or activity design, may be conducted by one teacher, and the same design may not be successful when conducted by another, despite the fact that the same activities are conducted. As such, the Positioning Model deepens the discussion around activity design, and particularly tries to fill in some of the human 'gaps' around the thinking about Learning Design and Educational Modelling.

The Positioning model relates to category a. In the personal habit model.

Evaluation Results

This section will explore the overarching issues which have emerged during the implementation and evaluation of SPLICE. These results are divided into two sections. Learner Impact results reflect the impact on learners, and learner comments related to the specific learning activities which were undertaken. Evaluation results and mechanisms reflects a deeper analysis of these results and the concluding models of the project.

Long-term impact over learner progression

Long-term learner impact was assessed through following a number of case-studies from Harlech as they progressed into HE. In all, about 80 learners engaged in SPLICE-related activities across the 4 institutions, with 40 engaging in Harlech, 15 of whom where in a group who would progress into HE. At the end of the project, these individuals were asked about their experiences with technology and whether they had continued to engage in the practices they were introduced to in FE. In some cases, there was significant change in practice, with engagement with Twitter by a number of learners an important index of their overall engagement with technology (they had been introduced to Twitter through SPLICE).

When interviewed, these learners expressed varying levels of engagement with the technology, from comments like "I plan to use social networks to keep in touch with many of the learners from my present cohort when we all go our separate ways at the end of term" to "I am now far more likely to participate in social networking sites – ideas for using similar sites pop more readily into my thoughts". Most impressive was the learner who thought social networking had "Absolutely changed [their practices]. Opportunities have arisen for me through using social networking. These would not have been possible otherwise". Other positive comments included: "I generally enjoy working in collaboration with others and the social network helped this" or "social networking has added flexibility to communication in a positive way".The fact practices evolved as learners progressed were reflected in other comments like "I've seen myself using SPLICE/Ning a lot less than I used to when I was on the FE course. Twitter, Brightkite and Facebook are used more these days". Such evolution of practice was precisely what SPLICE was aiming for.

The strongly positive comments about social software and personal transformation were however a minority. More measured views reflected that social software was "occasionally useful, but I don't use it regularly". Comments like "For some tasks [social networking] for example information gathering and sharing it is of great

benefit, however it is easy to get sidetracked in a ‘chat’ situation” indicate that the social networking was not seen as an integral part of life. Such a view is reflected in one learner’s comment that “[social networking has] not changed my view of the world – I have been a cynic too many years for this to change by something I feel is a trivial addition to life”. Surprisingly, one learner who had progressed into HE felt that social networking “can be [useful], but don’t really use it on HE”.
Interesting though these comments are, they tend to be superficial in their canvassing of opinion. A deeper examination was needed of these responses and this was attempted in the evaluation day where the SPLICEMind tool was used to create a collaborative mindmap to get an understanding of ‘why’ stakeholders felt they had or hadn’t changed in response to social networking.

The mind-mapping exercise was used to hone-in on possible mechanisms for change through an iterative 3-stage process over the course of the day:

1. brain-storming and capturing possible answers to a question
2. reflecting on results and voting for most effective answers
3. drilling into chosen issues and repeating the process

The process was repeated a many times during the course of the day, coordinated by a facilitator whose job it was to ensure fair representation of all stakeholder views. Stakeholders submitted ideas and voted through Twitter.

By the end of the day, this exercise resulted in a large MindMap. The initial starting questions were “How have you changed in your technological habits over the course of the project?” and “How have your institutions changed over the course of the project?” The day was divided between exploring these two questions.

The initial responses to the first questions included positive and negative comments from those present, depending on their experiences. On the positive side, some reported that they had changed through “following other professionals on Twitter” or being “more willing to let students dictate the agenda in the classroom” or by “connecting real life practice with the online environment”. On the negative side, some worried that “technophobes were getting left behind”, or were concerned about an “over-dependence on technology”. After capturing responses to the initial question, all stakeholders reflected on the responses gained and a vote was taken to decide which of these different responses would be pursued at the next iteration of the investigation. The top-ranked ‘indicator of personal change’ was the realization that “I became more relaxed about what I put online”. This was then pursued by repeating the data-gathering exercise and asking about the causes of this ‘increased relaxation’, or indeed what it meant.

Answers to this revolved around the emerging realisation that there was a large community of practice engaged in online social activity, with an increasing awareness that participation in online activity was an indicator of the social capital of an individual (“starting to judge other people by their online exposure”). The top-rated response in this iteration was that increased relaxation in putting things online was due simply to “realizing the value of online engagement”.

This raised the issue of “what is the value and when do you see it?”, since identifying ‘value’ appeared to be the principle cause for engaging with the technology. The iteration under this question produced responses suggesting that value lay in getting feedback and building relationships online. These issues gave extra evidence for the validity of the “What’s in it for me?” model. The next stage of questioning suggested that for some, real ‘value’ lay in what was still *not* put online. This raised the question of the distinction between that which is deeply personal and that which people are happy for others to see, and following this, the question of whether the boundary

between ‘public’ and ‘private’ life is changing in the light of technology. In turn, the differences between those who are disposed positively towards technology and those who aren’t became the focus of the next iteration.

Here, understanding the ‘relevance’ (as opposed to the ‘value’) of technology was considered important, together with an ability to change habits in the light of new developments. These issues of personal difference distilled to the differences between individuals who explored future scenarios in the light of new technological developments, and those who detected threats in technology to personal life. Finally, this led to a focus on the mechanisms whereby individuals organize themselves, with differentiation between those for whom priority was given to ‘future gazing’ and experimentation, and those who sought to remain in touch with embodied human experience and felt the need to ‘protect’ it from technology. This led to a discussion around the fact that the discussion itself was part of what technology does: that whether technology does or doesn’t work; whether users like or dislike it, there is something to talk about.

Short-term reflections of Specific Activity Designs for engagement with Social Software

Student feedback was collected for each of the activity designs which were conducted. This feedback too gives an indication of the impact some of the activities had on the learners (even if it is simply evidence that they were effective activities, rather than significant interventions in changing online habit).

On “Collaborative research activities” using delicious:

Tom – “I enjoyed being able to bring some of my favourites in from home and I no longer have to keep work at home separate from work in college”

Steve – “Without delicious I would not have applied to university. I know it sounds bad but all the other learners did the research to find the courses and all I had to do was look at them and decide which ones I wanted to apply to.”

On “Recording Personal learning experiences”

Sam – “When I was stuck one of my friends sent me a link to her blog where she had done something similar. I could understand my friend’s notes better than the teacher’s explanation”.

John – “I lost a piece of work when my memory stick failed but my blog let me do it again very quickly”.

On “Time Management activities”

Mark “Working like this much less stressful . . . I felt in control all the way through the assignment”

Tutor “No longer do we have the same panic as a deadline approaches!”

On “Brainstorming using Ning”

Jane – "I think that when brainstorming I preferred going onto the website ning as everybody posted ideas. I thought this was very helpful as I wouldn't have come up with sufficient ideas myself."

Alex – "The first part of this unit consisted of creating a list of 30 things which I would like to do before I'm 30; each member of our class posted their ideas on the 'ning' website. Producing the list wasn't that difficult as there are plenty of things which I would like to do before I'm 30 but some ideas which I found on the website were more appealing than others. I prefer using the ning website for brainstorming rather than producing a brainstorm round a table as I was able to put my ideas forward and everybody put something forward".

Antony (An Autistic learner) – "Adding comments was relatively easy as the website was easy to navigate around and used a simple uploading technique to put our ideas onto the forum which we used. Here is the text box which allowed us to type our 30 things in and share our ideas:

"Once all our ideas were posted on the forum I could then filter through the ones I wanted to use. This gave me a lot more ideas and made me think about the ones I rejected. Some of my class mate's ideas were much better than mine. I think doing this task using the 'ning' website was a great help and I would much like to brainstorm and gather ideas using this method again."

On "Videoing lessons"

Gurpreet "I ran the video 6 times before I understood but I got it in the end"

On "Peer evaluation"

Amir - "The advantages of the ning website is that when you post your product say a video or something, you get a number of viewers to view your work and also comment on the product which can be very useful and effective in giving me ideas to make changes and add extras influencing by the comments from the viewers. You also have online chats with fellow learners, and teachers discussing about the projects etc. "

Amir - Disadvantages of Ning:- "A big issue is that not everything uploads into this site so say you make a video with a different kind of format and ning doesn't support the file, when importing then you will have a problem with getting viewers to add comments at all." (www.zamzar.com allows the conversion of most video formats into a format accepted by ning sites.

Phil – "Here are some comments about my poster. As you can see there is much confusion about whether or not it's a girl skate park or skater team. – because of ning I managed to fix this".

On "Build up a course or group resource base"

Laura "I felt like I was contributing to the class in a more positive way than I had ever done before".

John "It took too long to transfer the information all I wanted was to include the URL"

Outcomes

In this section, assess the value of the project work. List project achievements against the aims and objectives set. Summarise project outcomes and their impact on the teaching, learning, or research communities. Indicate who will benefit from the work, how, and why. Also comment on what you learned that may be applicable to other projects, e.g. whether the methodology worked.

Social Software is a field where making clear distinctions about different practices, and the value of those practices, is difficult. Yet, without clear distinctions, strategic planning involving the use of social software is also difficult. The ultimate aim of SPLICE has been to provide an opportunity for examining the reality behind personal learning environments, and social software. The aspirations of earlier work on PLEs and their technical background needed grounding in practical realities. Naturally, the outcomes of SPLICE indicate that these aspirations of the PLE were messy on the ground.

SPLICE has created a set of distinctions for viewing the area of social software. Enshrined in the models that emerged from the project, the key themes of personal organisation, communication and transparency, learning design and institutional strategy can be linked. The value and utility of these distinctions can be seen in some of the follow-up work through SPLICE.

Understanding learning activities which work in the field of social software is a way of measuring the effectiveness of the distinctions used by SPLICE. One area where this has been used is in...

SPLICE has established new methodologies for the evaluation of complex iterative projects. The use of Realistic Evaluation and the identification of mechanisms has not only shown how useful these distinctions are, but has also shown that these things are important. It has also contributed to a body of software for the support of these developments.

SPLICE has identified those activity designs which work in changing habit, and identified how change might be harnessed within the institution. It has however identified how this sustainability is sometimes a problem.

Conclusions

Briefly summarise any conclusions that can be drawn from the project work

The SPLICE project can be summarised as a journey which started with work focused on learners and the acquisition of technological habit, and ended with work focused on teachers becoming more effective models of online habit. Thus, from roots in pedagogy and technology, it has finished in strategy and policy with regard to staff development. This process of development in the project has been accompanied by an emerging process of modelling.

Understanding and modelling processes of change in technological habit has been key to the project. The SPLICE models give a way of understanding:

a. Why use of web2.0 is not as widespread amongst learners as is sometimes supposed
b. Why resistence to web2.0 is sometimes strong amongst teachers
c. Why some interventions in changing habit are successful with some people, and not with others.
d. Why the transparency of Web2.0 is important to institutions

e. Although, not directly the focus of the project, institutional technology (particularly the VLE) is relevant because social software circumvents it. Thus, the experiences of SPLICE can give an insight into why the VLE plays a key role in institutional technology provision
f. Why certain interventions in changing habit work, and in what circumstances
g. Why large-scale transformation of technological habit in institutions is hard!

Essentially, the social software revolution requires new distinctions for thinking about the nature of the relationship between technology and institutions. Through its models and instances of practice, SPLICE has begun to articulate a set of distinctions which might help in navigating the space between institutional management and technological development. The “What’s in it for me?” model identifies the conditions for changes in personal habit to be sustained. The “Personal habit model” identifies ways of looking at the organisational priorities of individuals, where habit falls in this, and ways in which priorities might change and reorganisation occurs. The “Intervention Model” identifies ways of thinking about the interventions we make to change peoples’ habits. Finally, the “Positioning Model” identifies ways of thinking about relationships between people: particularly how teachers (or sometimes industrial practitioners) serve as models to their learners, or how new practices might be encouraged to grow amongst the inter-personal relationships between staff in an institution.

The effectiveness of the models produced by SPLICE is demonstrated by their explanatory power in some of the institutional scenarios that have occurred on the project, and on their impact in other institutional developments that occurred at the same time. This effectiveness of the modelling process seems to suggest that there is a deeper need for institutions to rebuild their models of themselves as they seek to take control of themselves in a transformed world. SPLICE has produced one way of making distinctions – there may be others or alternative approaches, but the importance for those distinctions to reflect the reality of institutional life, real teachers, real learners is paramount, and has been upheld by SPLICE.

Change is a very difficult thing to model. In SPLICE, the challenge of modelling change led to some significant innovations in the project methodology and evaluation. In using Realistic Evaluation, the chief ‘data’ of the project included stakeholder theories, with theory in general playing a more central role in the project evaluation than is typical of more traditional ‘no theory’ (e.g. grounded theory) or ‘single theory’ (e.g. scientific method) approaches.

Implications

Consider the future implications of your work and how others can build on it. What are the implications for other professionals in the field, for users, or for the community? What new development work could be undertaken to build on your work or carry it further?

The implications of SPLICE have been additionally borne out on work which has run concurrently with it on Inquiry-based learning, e-strategy and activity design.

These implications can be summarised:

Implications around the PLE

The general findings of the project were that a few learners had radically transformative experiences, but these learners were at the 'high achieving' end of the spectrum. Thus, we conclude:

1. The PLE is an aspiration, not a reality
2. PLE usage is highest amongst high-achieving learners; less-achieving learners struggle with the PLE concept – they tend to prefer institutionally-led solutions to the management of their learning
3. The demise of Institutional learning systems ("death of the VLE") is over-stated. However, the landscape for teaching and learning with technology has dramatically changed in 10 years since the first VLEs. The dimensions of viewing institutional technology are becoming richer as a result of developments outside the institution. The VLE may be seen not only as a tool which helps teachers organise learners in learning activities, but additionally, a means by which technological capacity can be leveraged throughout the institution, or a platform where new approaches to learning activity design may be developed and promoted.

Recommendation

The VLE needs to be 'redescribed'. Although functionally it is the same technology as it was 10 years ago, the transformed landscape around it means that its potential and perceived function within the institution has changed. What this new function is, and how institutions can exploit it needs to be explored further.

Technological Habits

1. When learners and teachers acquire changed habits in using social software, an online way of organising themselves persists, but the specific technologies they use to organise themselves evolves.
2. Habits are deeply personal and difficult to change. The difficulties may be more marked in teachers rather than learners, although both groups can be resistant to change.

Recommendation

SPLICE has begun to articulate a 'rhetoric' of changing habit. The skilled use of exhortation, coercion and disruption, together with the positioning that exists between 'models of practice' and those inspired by such models can contribute to a recipe for instilling habits. This can be understood at a pedagogical and a strategic level. More work is needed on these distinctions and their practical application within institutions.

Teaching and Modelling

Some creative industry practitioners had a considerable impact with both learners and teachers. Teachers who didn't 'model' web2.0 behaviour struggled to engage their learners.

1. Those teachers who model behaviour of Web2.0 and PLE have the greatest impact on learner acquisition of habit.
2. Good models of behaviour may not be institutional teachers, but external practitioners, or friends and colleagues.
3. Curriculum designs which give learners access to 'Models' (i.e. industrial practitioners) from outside the institution can be highly beneficial to learners.
4. It is not the teaching of the 'tools' of Web2.0 which are effective, but the success of the learning activities which employ those tools. With successful learning activities, practices with the tools may be instilled.

Recommendations

On the one hand, Learning Design allows for the focus to be taken away from the use of specific tools, and instead *activities* using those tools described and reproduced. On the other hand, our understanding of the design of learning, and particularly the distinctions made in IMS Learning Design need enriching, to take

account of the deep issues of personal change and the relationship (positioning) between teacher (as model) and learner.

Institutional Implications
The impact of SPLICE on one institution led to a curriculum redesign. This process arose through increased pedagogical discussion that had emerged from the project, and increased visibility of some teaching practices. At the University of Bolton, the importance of transparency from technology usage (not just social software) on raising pedagogical discussion has been fed into an e-strategy which aims to raise technological and pedagogical discussion throughout the institution.

1. The use of social software increases the transparency of teaching practice, which in turn can increase the level of pedagogical discussion in institutions.
2. The challenges of engaging teaching staff in Web2.0 practices can be as great as engaging learners. A 'drive' on using web2.0 without teacher buy-in can result in confusion for teachers and learners.
3. Sustainability of social software innovations is problematic – these still rely of effective modelling of practice, and if the practitioner who models Web2.0 engagement leaves the institution, the innovations that they brought can dissipate within the institutional culture.
4. Transparency should provide a way of ensuring the maximum visibility of innovative teaching practices to build communities of teachers within institutions so as to increase the probability that innovations are sustained.

Recommendation
Transparency of the professional activity of teachers is key to establishing a richer pedagogical discussion within institutions. How this is to be achieved, how resistance to transparency can be overcome, etc, all need further work.

Methodological Implications
Understanding the mechanisms of personal change in technological habit, and particularly how these are related to different forms of intervention have been strategically significant at the University of Bolton. In particular, the realisation that "exhortation alone won't work" when encouraging teachers to engage in technology means that mechanisms for coercing engagement and disrupting practice must also be considered in strategy design.

1. Knowledge of mechanisms in personal habit acquisition with software usage is a useful guide to institutional strategy
2. Stakeholder theories can be gathered, shared and explored through effective use of technology. The process of doing this can be a. Instructive about "where people are coming from" and b. Transformative on the ways teachers view their professional practice.
3. An iterative project design, Systems theory models and a Realistic Evaluation approach can provide effective ways to investigate the problems of social software (and technology usage in general), where a wide variety of stakeholder perspectives may be considered and the results cumulated into meaningful models.

Recommendation
Conventional methods of evaluation on projects need reassessing and problems arising from existing methods (particularly the difficulty in cumulating diverse project outcomes into coherent and realistic strategies) addressed. Realistic Evaluation provides one way, but there are other techniques which could also be explored.

Teaching, Learning and Institutional Change
SPLICE has been closely related to the TESEP project at Napier University, where similar processes of institutional change have been attempted. SPLICE has reinforced some of the findings from the TESEP work. At the University of Bolton,

work on Inquiry-based learning which ran concurrently with SPLICE developed a 'co-learner' model of teaching. This latter development highlighted the importance of designed learning experiences: an issue which has also become dominant in the growing international work of the University of Bolton.

1. Designing learning experiences around Web2.0 usage which can be reproduced in a variety of circumstances is key lever to raising capacity of teachers and learners.
2. The subtle distinctions concerning the ways in which teachers engage with their learners – particularly the 'positioning' between teachers and learners (i.e. sage on the stage, guide on the side, co-learner) are key factors in engagement with Web2.0. The TESEP project has suggested that use of social software lends itself to a co-learner perspective.
3. It may often be 'co-learner' positioning aspect of Web2.0 engagement which teachers resist, rather than the technology itself.

Recommendation

Ways are needed for documenting successful processes of institutional change. SPLICE's distinctions provide one way, TESEP has some other ways of describing these change processes. These need to be investigated further, and other ways of describing change explored.

Strategic Issues

The University of Bolton's e-strategy focused on 'communication' as a result of work on SPLICE.

1. Institutions are built around communication, with both the physical estate and the online infrastructure contributing to an environment where 'successful' communications between all the stakeholders of the institution become more probable. The transparency of online communication can contribute to this, but only where the basic issues of habit to engage online can be addressed.
2. The contribution of the physical estate and the online infrastructure are clearly related giving rise to the need for a coherent approach to strategy which addresses both.

Recommendations

New distinctions are required which unify issues of the physical estate with online infrastructure, where common thinking and principles can be applied which lead to the realisation of a Technology-Enhanced Learning Environment which demonstrably increases the effectiveness of communication within the institution.

Overall Recommendations

List any specific recommendations for the teaching, learning, or research communities.

1. Social Software usage brings many advantages to teachers and learners, but depends on teacher buy-in and modelling of practice; only with access to good models of practice do learners have transformative experiences. More work is needed to give learners access to individuals who model practice with social software. This may entail raising capacity in teaching staff (i.e. changing existing technological habit) or developing new models of curriculum which allow for the engagement with Web2.0 practitioners outside the institution.

2. A key issue in the success of good modelling of practice is the ways teachers 'position' learners. Social software lends itself to a 'teacher as co-learner' model, and those teachers who wish to uphold positions of authority over their learners are less likely to engage in social software. One way of dealing with this is to put greater emphasis on designing learning activities rather than

3. Educational Institutions make communications. The infrastructure of institutions, including the online and physical infrastructure should serve to maximise the probability of effective communications. Transparency provided by technology, both social software and institutional technology, can help to achieve this and raise levels of learner engagement and pedagogical discussion. Better distinctions are needed which can bridge the gap between thinking about pedagogy, curriculum, the estate and enterprise systems. SPLICE has indicated that there may be a 'rhetoric' of technological/institutional intervention involving exhortation, disruption, coercion and positioning.

4. Identifying the value of project work, cumulating outcomes and realising value across the sector is a methodological issue, and more attention needs to be placed on the methodological background of project design, and the development of 'middle-range' theory when considering diverse project and programme outcomes.

References

Beer, S. (1981) *Brain of the Firm* Second Edition, John Wiley, London and New York.
Bhaskar, R (1975) *A realist theory of science* Sage
Harré, R (1984) *Personal Being: A Theory for Individual Psychology* Harvard University Press
Johnson, M; Liber, O (2008) The Personal Learning Environment and the Human Condition: from Theory to Teaching Practice *Interactive Learning Environments, v6, no. 1*
Luhmann, N (1995) *Social Systems* Stanford University Press
Pawson, R; Tilley, N (2004) *Realistic Evaluation* Sage

Academic Outputs

Pollard, B; Johnson, M; Hall, G; Edwards, M; Ward, R (2009) Bringing Social Networking into the Learning Process, *CAL 09, Brighton*

Johnson, M; Lager, P; Edwards, M; Hall, G; Pollard, B (2009) Between Analysis and Transformation - Technology, Methology and Evaluation on the SPLICE project, *ALT-C Proceedings (pending review)*

Johnson, M; Hall, G; Edwards, M (2008) Technology, Transparency and Communication in institutions: Social Software in the SPLICE project, *Proceedings of LICK Symposium, Edinburgh*

Johnson, M; Sherlock, D (2009) Learner Reflexivity, Technology and 'Making our way in the world' *International Journal of Engineering Education and Lifelong Learning (in press)*

Johnson,M; Sherlock, D (2008) Personal Transparency and self-analytic tools for online habits, *TenCompetence workshop*

Johnson, M; Edwards, M; Hall, G; Pollard, B (2008) "Situating Competence Within the Person: Modelling Social Engagements in the SPLICE project" *TenCompetence Conference, 2008*

Edwards,M; Hall, G (2008) "Learner Modelling, Creativity and Social Action: Building online self-confidence on the SPLICE project" *ALT-C, 2008*

Johnson, M (2008) "Emancipation and the Personal: Critiquing social diversity within online communities in Education" *IACR international conference, London*

Johnson, M (2008) "Critical Realism and the Evaluation of Educational Technology Interventions: the case of the JISC distributed E-learning Pilot Projects" International Conference on Critical Realism in Education, London

Johnson, M (2008)
Lager,P; Johnson, M "Game-based tools for the self-modelling of learners: the case of InnerState" *ALT-C, 2008*