

# **Reflective Social Portfolios for Feedback and Peer Mentoring**

Alan J. Cann and Joanne L. Badge.

School of Biological Sciences, University of Leicester, UK.

Keywords: reflection; social networks; portfolios; professional development;

Corresponding author:

Alan J. Cann, Department of Biology, Adrian Building, University of Leicester,  
University Road, Leicester LE1 7RH, UK. Email: [alan.cann@le.ac.uk](mailto:alan.cann@le.ac.uk)

## **Abstract**

This paper describes a process of migration from formal, paper-based, institutionally-owned processes towards informal, social, student-centred personal development. In terms of tool use, this journey involves moving from isolated personal silos to flexible online networks which attempts to use social tools to increase engagement with education. We describe here the evidence we have collected and analyzed which shows that social network portfolios allow powerful yet highly granular feedback loops and encourage the emergence of peer support and mentoring networks. The only useful web tools are those which students choose to use. By harnessing the attraction of social networks, we are attempting to claw back a segment of the attention economy from the purely social and direct the focus towards socially-constructed reflection and engagement with education.

## **Introduction**

Students are transients within higher education. The knowledge and skills they acquire in this time are relevant for future career progression and are part of lifelong learning. Graduates therefore benefit from having continued access to a virtual study network based on their undergraduate experience. Resources for their formal learning not only originate from their university teachers but also from a range of informal virtual sources. Integrating formal and informal sources into a symbiotic whole to benefit the students is a worthwhile objective in its own right. Web 2.0 is often considered mainly in the context of entertainment or e-commerce. The use of freely available tools such as social bookmarking, online office suites and social networks enables students to use Web 2.0 tools for formal learning. By encouraging students to develop their own personal learning, research and networking space, they will be equipped with sustainable lifelong learning skills that can persist beyond their university careers and the confines of closed institutional learning management systems.

## **Personal Development Planning in UK Higher Education**

In response to the National Committee of Inquiry into Higher Education (Higher Education Academy, 1997), in 2005/06, UK higher education institutions were mandated to introduce Student Progress Files to promote Personal Development Planning (PDP). Student progress files were intended to:

- Support a more explicit representation of achievements within programmes of study, an aid to students from diverse backgrounds
- Encourage more consistency in the recording of these achievements
- Foster an appreciation of lifelong learning amongst students
- Develop greater self-reflection and action planning skills amongst students to take with them through their programmes of learning, into the workplace and other aspects of their lives
- Add value to the student learning experience

and consist of:

- A transcript recording student academic achievement, which should follow a common format devised by institutions (Universities UK, 2007)
- A process of personal development planning, which is the means by which students can monitor, build and reflect upon their personal development

Although the HEFCE Strategy for e-Learning (HEFCE, 2005) encouraged e-based systems to support PDP, institutions were left with a free hand as to how to implement these requirements.

### **PDP at the University of Leicester**

The University of Leicester devolved decisions about the practical implementation of PDP down to departmental level. In the School of Biological Sciences, a paper-based exercise was rolled out, centred around a student self-assessment, supported by a personal tutor system. Take up was low, and only a minority of students actively participated in the scheme.

All of the studies described in this paper were approved by the University of Leicester Committee for Research Ethics Concerning Human Subjects prior to commencement. In order to try to improve student engagement with the concept of PDP, in 2008 we revised the scheme within Biological Sciences to include an e-portfolio. Our strategy was to promote the use of the institutional virtual learning environment (VLE) and a personal learning environment (PLE) concurrently. The VLE was popular with both staff and students, but suffered from the constraints of being technologically inferior to newer Web 2.0 tools and being linked to a particular course of study, after which access is unilaterally withdrawn by the institution. Unlike the VLE, students would be able access tools chosen for their PLE after graduation, thus facilitating lifelong learning and personal development by utilizing tools which exist outside the confines of the institution. This objective was approached by the delivery of a radically updated first year I.T. and numeracy key skills module for all first year undergraduate students in the School of Biological Sciences (approximately 200 students per year). The inclusion of Web 2.0 tools and collaborative working

was utilised in problem-solving assessed tasks, building over two semesters to an online portfolio. The intended learning outcomes for students were:

1. Learning to use Web 2.0 for formal studies. Although a large majority of students enter university with some Web 2.0 experience, their use of such tools is usually confined to content creation and entertainment. To maximize the educational potential of these emerging technologies, staff need to help students extend their knowledge of Web 2.0 for learning.
2. Using Web 2.0 for PDP and lifelong learning. By helping students to develop an online personal learning, research and networking space, we hoped to equip them with lifelong learning skills. Integrating PDP with the creation of a PLE was intended to ensure that PDP was not understood as a “stand-alone” or extraneous process, but rather as an organic one, integral to their learning and academic development.
3. Preparing HE students for future employment. Many organisations require their staff to be mobile. Students familiar with Web 2.0 tools will be able to demonstrate to potential employers their competencies in knowledge management and working collaboratively online.
4. Online behaviour and identity in the Web 2.0 environment. Although Web 2.0 technologies were originated primarily for creativity and entertainment, content in these sites is accessible to the wider public, including employers. We provided students with guidelines on using Web 2.0 technologies to develop online identities in a responsible and safe manner and to indicate their professionalism to potential employers.

In addition, the intended outcome for academic staff was to encourage the use of Web 2.0 for their own PDP and lifelong learning. The many roles played by academic staff in HE can all benefit from the application of Web 2.0 technologies. Staff's personal research can benefit from utilising Web 2.0 tools for horizon scanning, current subject awareness and collaborative research projects. Helping staff to develop an online personal learning, research and networking space will, in turn, enable them to assist students in their development.

All first year undergraduate students in the School of Biological Sciences take common key skills modules that encompass I.T. and numeracy skills. We revised these modules to incorporate the creation of a PLE. A Web 2.0 approach to information literacy was integrated with existing module components such as numeracy and statistical analysis, and was linked to concurrent Biological Sciences modules through the assessment tasks which students were set. This was intended to make clear to students that these technologies are fundamental to their approach to learning, and not bolted-on assessment hoops through which they have to jump. In order to ensure participation across the entire undergraduate cohort, students were set weekly compulsory assessed tasks to demonstrate their competency. In first year key skills modules, technologies such as social bookmarking, RSS readers and collaborative online office tools were introduced, accompanied by assessed problem-solving exercises. Formal quantitative assessment alongside qualitative assessment such as module questionnaires was intended give a measure of how students engage with these technologies, and which ones they most appreciated.

Prior to the project, we conducted a wide-ranging evaluation exercise to select the most appropriate tools and services which would be demonstrated to students and used to form the basis of their PLEs and used to build their e-portfolios, working within the guiding principles of free online availability of tools, academic utility, robustness of service and personal choices. Personal choice was an important element since it promotes ownership of learning and is therefore more likely to achieve our lifelong learning objectives. However, since we somewhat reluctantly made the decision that student's work on these module would be assessed, we were forced to limit the number of software choices available in order to construct a viable assessment scheme. The need for assessment was driven by the fact that this was a credit bearing component of the degree programme and previous observation of extremely low participation rates in unassessed activities. The tools chosen were limited to some extent by the timetabled slots for this module. Selection was based on what was felt to be most useful and sustainable for this cohort, e.g. most relevant to degree study, freely available, not likely to disappear in a short time-frame. The evaluation phase of the project, completed in May 2008, resulted in the selection of the following key services for delivery on the module in 2008/09:

1. Google Reader (RSS subscriptions)
2. delicious (social bookmarking)
3. Google Documents (word processing, presentations & posters)
4. Flickr (image sourcing and processing)
5. e-portfolios

To facilitate construction of student-owned e-portfolios, we initially selected two wiki sites (wetpaint.com, wikispaces.com) and a blogging tool (wordpress.com) as the choices promoted to students, although students were told that they were free to use whatever tools they wish to build their e-portfolio as long as they discuss and justify their choice with a member of staff before embarking on the project. The outcome of the preceding evaluation project was to select these tools rather than commercially-available e-portfolio packages since these are free, and available to students for as long as they wish to use them. In the event, all the the students elected to use the wiki architecture, although they used the sites in different ways. To assist in the construction of e-portfolios, students were give exemplars based on a fictional first year student. These were hosted on the Wetpaint/Wikispaces/Wordpress.com sites. Students were also given assessment criteria and a schedule of four assessment deadlines. The assessment criteria were based loosely on the reported e-portfolio assessment criteria from Penn State University (Penn State University, 2006). These modified assessment criteria proved to be robust and reasonably simple to operate:

*Functionality & Appearance: 30%*

Appearance and navigation is clear and consistent  
 All links work  
 Multimedia elements display correctly  
 Text is clear and readable, spelling and grammar are correct  
 Previously published materials respect copyright laws

*Evidence: 30%*

Organization connects all evidence into an integrated whole  
 Features or showcases evidence  
 Shows depth of knowledge and experience  
 Shows breadth of knowledge and experience  
 Includes a current curriculum vitae

*Reflection: 40%*

- Addresses both career and personal development
- Includes reflective comments about evidence as well as reflective comments about what this evidence says about you
- Includes short-term goals (skills to add/improve)
- Includes long-term goals (professional and/or personal aims)
- Interpretation of your achievements is expressed

## Outcomes

The core academic staff involved in delivering these modules also developed new marking methods by collaborating in real-time using a mixture of Google spreadsheets and Twitter (public and private comments) to mark and moderate student submissions. Although the institutional VLE was used as an authentication hub for administration and assessment of the modules, student activity took place across a wide range of distributed services, some of which were difficult to track. All of the services used were linked to assessed tasks and marks were recorded via the VLE. Formal and informal feedback was received from students in face to face sessions, and via numerous online channels, including the VLE, email and Twitter.

Student response to the introduction of these new technologies was generally muted. Where tools fitted clearly into what were perceived to be tasks readily associated with academic study (e.g. writing essays, giving presentations), they were readily accepted without much comment. With tools which introduced new concepts to many students, e.g. social bookmarking to share information across modules, RSS subscriptions to journals, there was some resistance, as these were perceived as non-core tasks which might detract from academic attainment as narrowly defined by marks. Apart from questionnaire feedback, it is difficult to accurately assess ongoing use of some of the services in the PLEs due to privacy problems. To counteract this and to provide a focal point, at the end of the module we asked students to draw mind-maps of the components they felt made up their PLEs. This complex data is summarized in figure 1. Such student self-reported data needs to be interpreted carefully, but the Google/Wikipedia internal controls in the mind mapping exercise (which effectively 100% of students use) seem valid. Students expressed a strong preference for "trusted" brands such as Google and YouTube, even though these are not normally considered to be academic channels. These





The process of signing up for a series of isolated tools intended to form the nucleus of a PLE, coupled with an extended assessment (6-8 weeks) to try to embed continued usage, was unpopular with the majority of students and generated considerable negative feedback on the course questionnaire:

- "In my opinion many of the assessments we did are not relevant to my other modules. In particular the PLE, RSS feeds and delicious."
- "I didn't feel this course was necessary in my degree course it took up a lot of my time. Time which I feel would have been better spent doing work more related to my degree such as practical reports and essays."
- "What's the point in a module which contains no teaching. We don't pay three grand a year or more just to be tested, so get rid of this rubbish, there is no need to be at university to do it."
- "I resent being forced to take a module in pointlessness and see no reason why this course exists, it should be made optional for those who feel the need, we are university students and are very capable of filling the gaps in our own skill base without the need of a module in basic concepts."

Many students struggled to distinguish between a curriculum vitae and a portfolio.

The process and value of reflection needed to be emphasised. Because e-portfolios were "taught" within a single module there was little feed-forward, at the end of the module students move on to the next course, a drawback of modularization.

Students tended to dislike portfolios, whatever the format. Fundamentally, it was the process of enforced reflection they found challenging rather than the software used or the implementation. In responses to questionnaires, students implied that they did not enjoy reflecting on learning because they perceived it to be "not relevant" to a science degree. This is a common attitude which takes a long time to wear down.

The context the portfolio task is presented in is of great importance. At the start of the module, students had been made aware of the issues relating to public/private access to their e-portfolios. 56% of the e-portfolios created were public, and these were distributed evenly between the two wiki sites. However, once the 10 week assessment period ceased, nearly all the students stopped contributing to their portfolios and less than 1% of e-portfolios were updated after the end of module.

This lack of take-up was regarded as a failure to engage the students with the

importance of reflection, and consequently it was decided to change the approach for the following academic year.

### **Rationale for using social networks in education**

One observation was particularly striking. Even though no students chose the Wordpress option for their e-portfolios, one student created a page on their wiki on which they entered regular reflective contributions. Effectively, they had turned the wiki into a blog. This suggested that the wiki architecture, chosen to provide maximum flexibility, lacked the scaffolding necessary to encourage students to acquire the habit of regular academic reflection. Initially, we planned to base future student e-portfolios on a blog format to deal with this issue, but as we observed the increasing pull of social networks on student attention, we decided to base future reflective portfolios on a network structure rather than a single-site destination. In active social networks, "friends" status updates form intermittent variable rewards, one of the most powerful methods of operant conditioning (Ferster & Skinner, 1957; Zeiler, 1968). We sought to derive student engagement with the process of academic reflection from these attributes.

Although Facebook is pre-eminent in commanding student attention (Long, 2010), we decided not to use this site in order to avoid complications arising from the overlap of social and professional online identities. Instead, we chose to use the Friendfeed social network (Friendfeed.com). Friendfeed has a similar structure to Facebook, allowing users to post entries which can include links or attached files. Friendfeed was purchased by Facebook in August 2009, and with the merging of technologies, Facebook increasingly resembles Friendfeed. Like the Twitter microblogging service (twitter.com) but unlike Facebook, Friendfeed allows asymmetrical following, i.e. non-reciprocal subscriptions. In mathematical terms, this is referred to as a directed graph. Subscribers can "like" entries from the people they follow, or comment on them in a threaded fashion. Accounts can be private or public (controlled by a single checkbox) but all operate on a friend of a friend (FOAF) basis. All students were asked to subscribe to the three staff members involved in supporting the course and in turn, the staff subscribed to each student. The FOAF nature of the Friendfeed system meant that all students in the extended network saw

any comments that the staff members made on other student entries, regardless of whether they were subscribed to that student themselves.

We asked students to keep their existing Facebook accounts for private and social content, and reserve Friendfeed for education-related reflections and content. None of the 2009/10 cohort of students entering our degree courses had an existing Friendfeed account and so all created dedicated accounts for their social portfolios. We introduced the students to the concept by using the following phrase:

*Friendfeed is like Facebook for your degree*

Students were informed that they would be assessed on the number of contributions they made to Friendfeed averaged over the course of an academic term.

Contributions could be in the form of status updates, comments on others updates, or shared links, but to count for credit, external links must be accompanied by a short commentary explaining how and why it is relevant. We gave students support and feedback by joining in conversations on Friendfeed, using direct (private) messages where appropriate, as well as in weekly face to face support sessions. Marks were awarded as follows, for activity over the course of the whole term:

An average of four or more contributions each week with suitable reflective content: 100%

An average of three contributions week each with suitable reflective content: 75%

An average of two contributions week each with suitable reflective content: 50%

An average of one contribution each week with suitable reflective content: 25%

An average of less than one contribution each week and/or no suitable reflective content: 0%

Apart from engagement, there are other advantages of basing a PLE/portfolio on a social network. Student (and staff) weariness with having to sign up for yet another online service is all too evident. There are also problems in terms of tracking usage across various services (in particular Google Reader). While building a PLE based on a distributed toolset is optimum in terms of the tools available, it sacrifices the

convenience of doing everything inside a big-box VLE. Social networks offer some of this convenience back, while allowing students to retain ownership of their network and associated tools during and after formal education, and offering better data to track continued usage after courses have ended, all problems which arose previously with a distributed toolset PLE. Based on our previous experience, the key questions about this social portfolio concept we wished to address were:

- How would students respond to the Web 2.0 tools?
- How much support would students require, both in terms of selecting content and using the technology, in order to engage effectively with the tools?
- Would the tool facilitate genuine reflection, rather than the mere recording of “stuff-what-I’ve-done” and is it necessary to facilitate, separately from the portfolio, the deeper level process elements of PDP?
- To what extent will the introduction of the tools within the context of a taught module shape or inform types of student engagement?
- Would students’ engagement with the tools extend beyond the life of this taught module?
- How would academic staff respond to the introduction of the portfolio facilities?

## **Outcomes**

### *How did students respond to the Web 2.0 tools?*

92% (165/179) of students created social portfolios. Of the 8% who did not participate, most also failed to submit a significant number of other assessments, so this group represents a sub-cohort with wider academic problems. The social portfolios were assessed at the end of the module and the simple scheme of assessment based on average number of contributions described above was found to be robust and easy to administer. The average mark for the social portfolio exercise was 76%, with 57% of students scoring the maximum mark available for

this exercise. Over 10 weeks, 134 students whose accounts we were able to analyse in detail produced 5,376 entries, ranging from a single word to several hundred words, 8,151 comments, 5,232 "likes", and wrote 199,853 words (an average of 1,491 each, not including private messages). In Friendfeed, "Likes" serve two important functions. Clicking the "Like" link transmits attention between network nodes by placing the chosen item on the main feed of all the subscribers of that individual. In addition to traversing the synapses of attention, "Likes" also reward contributions by serving as "strokes", in the vocabulary of emotional intelligence (Mortiboys, 2005).

*How much support did students require in order to engage effectively with the tools?*

Very little additional instruction was needed as the similarity with the familiar Facebook was sufficient. We encouraged ownership of this non-institutional resource by calling these social portfolios "your Friendfeed" in the same way that students colloquially refer to "my Facebook". We also discussed issues of online privacy with them, although unlike Facebook, privacy settings in Friendfeed consist of a simple single public/private checkbox. In the event, approximately one third of students chose to make their accounts private. Students were given regular feedback on their performance as private messages via the network, with additional feedback available on request. Much more staff time was taken up in giving feedback over the course of the term than in administering the final assessment. The definition of reflective content was deliberately left open, but examples of possible contributions were given. These included status updates containing reflections on learning or attainment, sharing and describing links to online resources relevant to the course, and engaging in work or study-related discussions with others on the network.

*Would the tool facilitate genuine reflection, rather than the mere recording of "stuff-what-I've-done" and is it necessary to facilitate, separately from the portfolio, the deeper level process elements of PDP?*

Much of the traffic on the network centred on shared links, tending to confirm the suggestion that successful social networks are frequently object-centred (Stutzman,



Another valuable feature of Friendfeed is that any alphanumeric string preceded by a hash sign (#) automatically becomes a search term. We took advantage of this feature by encouraging students to use hash-tagged institutional module codes whenever they shared links, discussed content or asked questions relevant to one or more modules. This enabled us to embed these streams in the relevant sites on the institutional VLE, appearing as a frame linked to an item in the navigation menu. In the same way, we replaced under-utilised and clunky VLE discussion boards with a direct link to Friendfeed. This integration allowed users to move seamlessly between the VLE and the network without dividing attention, and linked discussion and feedback from one environment to the other (Figure 3).

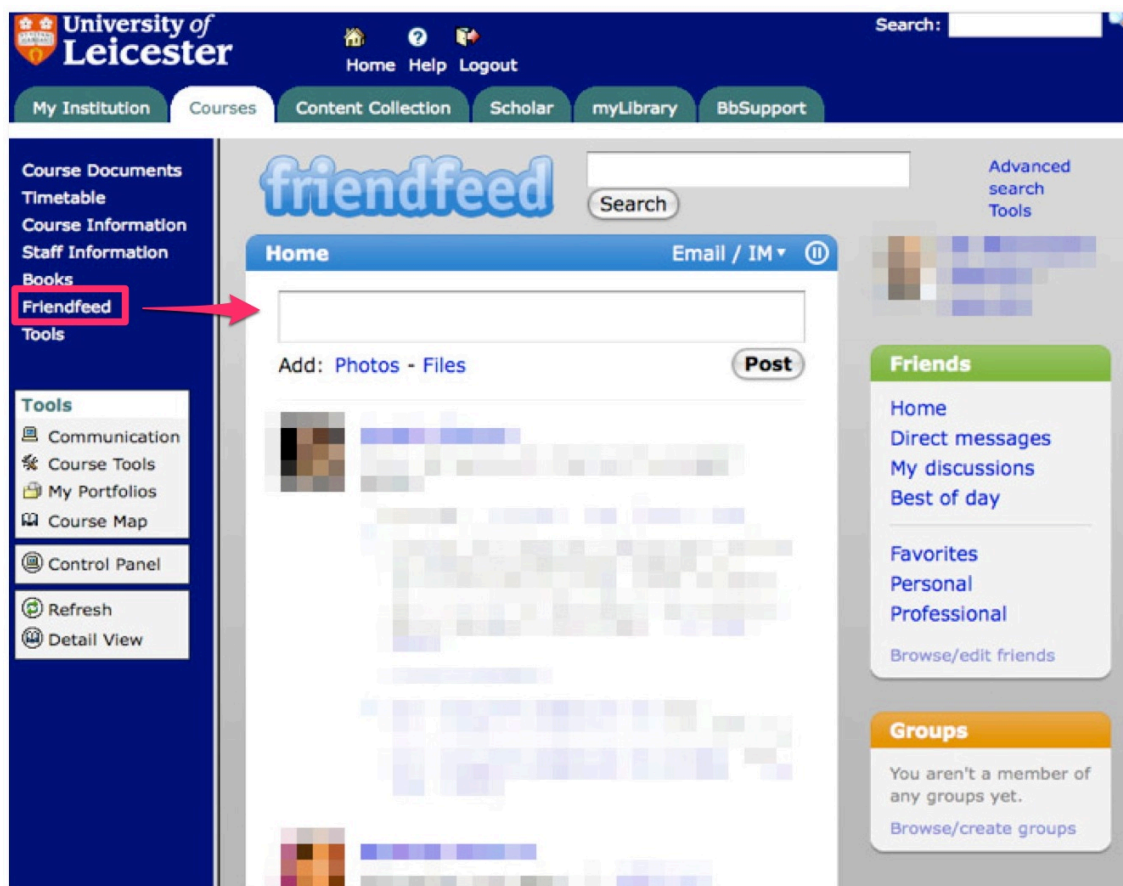


Figure 3: Friendfeed integrated within a module site on the institutional VLE. Friendfeed logins are persistent so students could comment directly from the VLE and the page refreshed automatically.

Figure 4 show graphs depicting the range of entries (status updates), comments and "likes" for the students in the study. Also shown is a timeline across the 10 week assessment period for each of these categories. Interestingly, this shows no evidence that the number of contributions fell with time, indicating that students were highly engaged with their online network. This is in distinct contrast to previous observations where we have repeatedly seen clear evidence of contribution fatigue and a pronounced falling off of contribution rates after a few weeks.

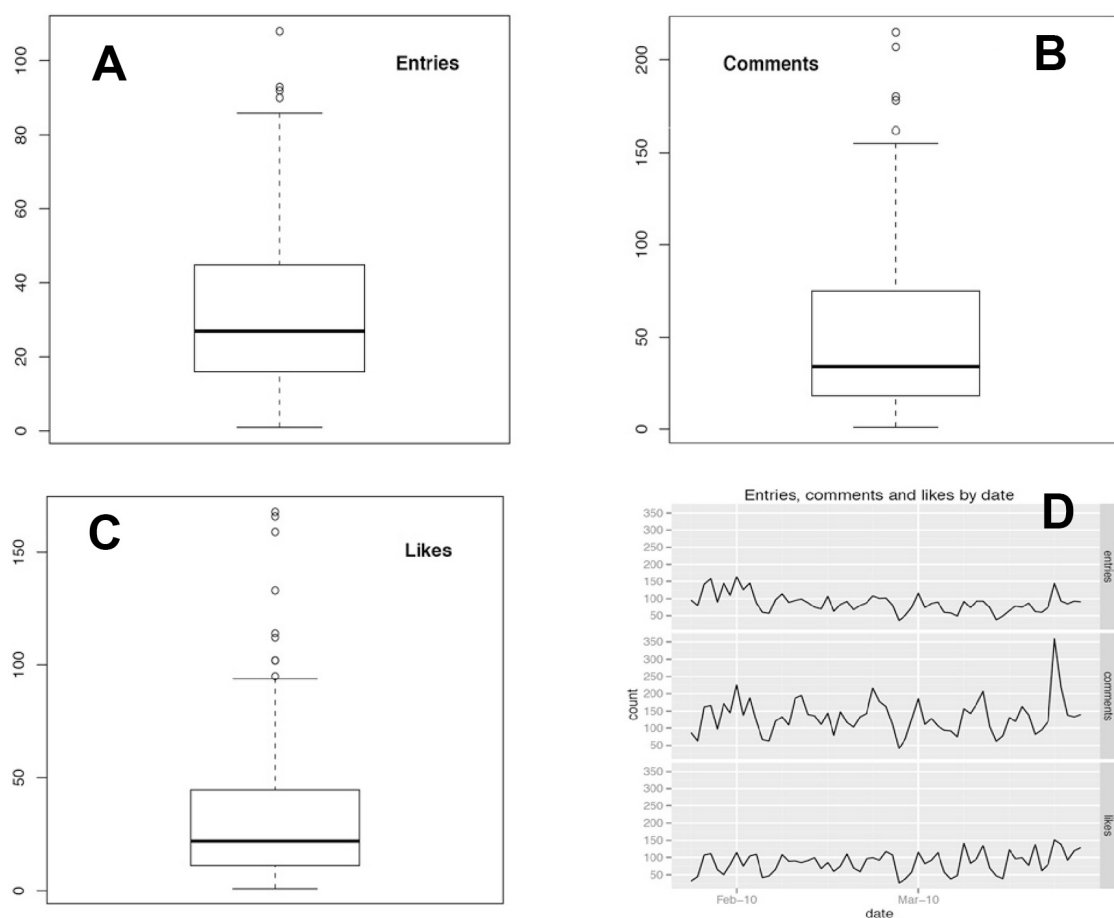


Figure 4: A-C: Box and whisker graphs showing contribution ranges for student entries, comments and likes on Friendfeed; D: Time course of Friendfeed entries comments and likes over the 10 week assessment period.



Analysis of Friendfeed subscriptions (equivalent to Facebook "friends" or Twitter "followers") shows the same pattern of lower numbers in males than females but no statistically significant difference in behaviour between the genders. We looked in some detail at the issue of how gender affected use of the network. While female students in general made more contributions (entries) than males, the picture is complex - for example, the top contributor was male. Assessment based on social network activity did not favour one gender over the other. Although females scored higher marks than males, there was no statistically significant influence of gender (chi square,  $p$  0.58), and hence no evidence in this sample that assessment of social network activity has a gender bias (figure 5).

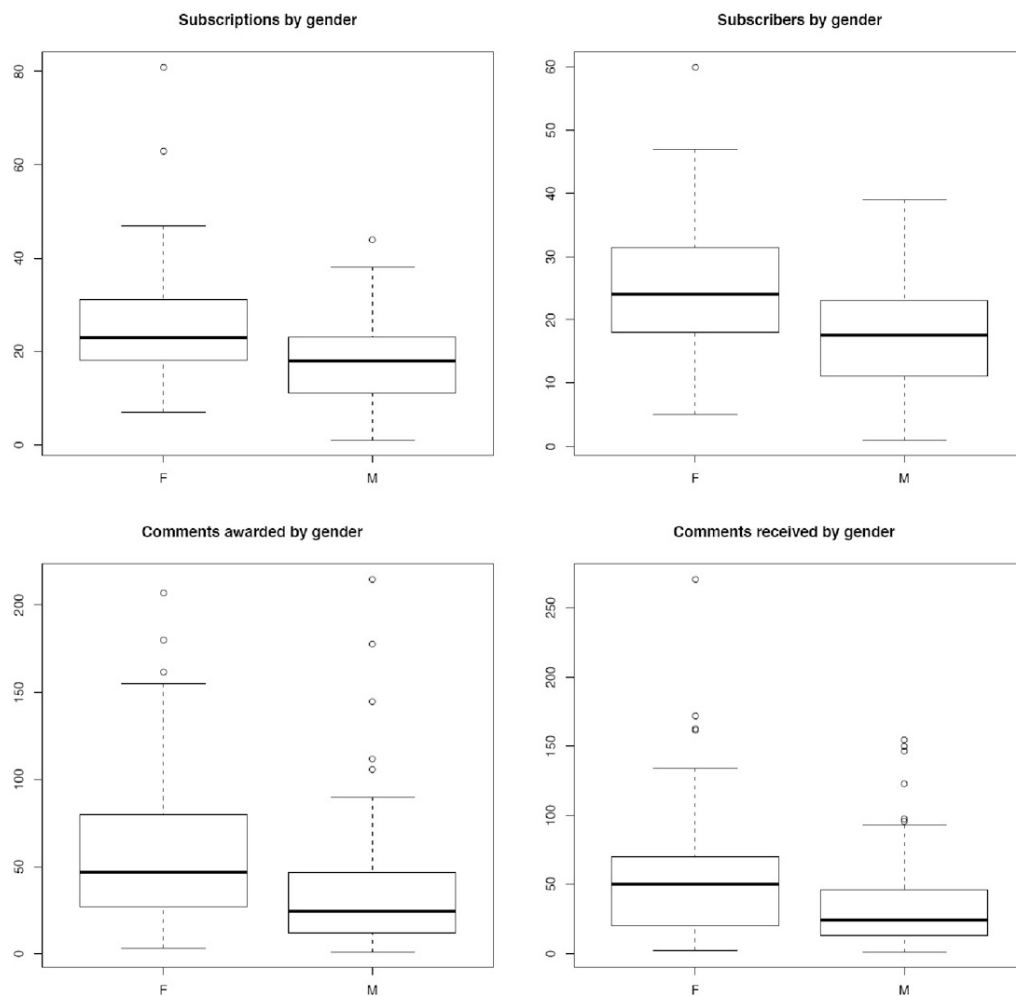


Figure 5: Box and whisker plots of Friendfeed subscriptions and comments by gender.

We used the open-source Gephi tool (<http://gephi.org>) to visualize the network graphs and perform statistical analysis of data extracted from the Friendfeed application programming interface (API) (<http://Friendfeed.com/api>). Figure 6 shows a graphical representation of student network subscriptions. Gephi is a powerful tool which makes it easy to analyse individual elements of large networks. Panel B of figure 6 shows an expanded view of a small section of the same network to illustrate the complexity of the interactions being analyzed.

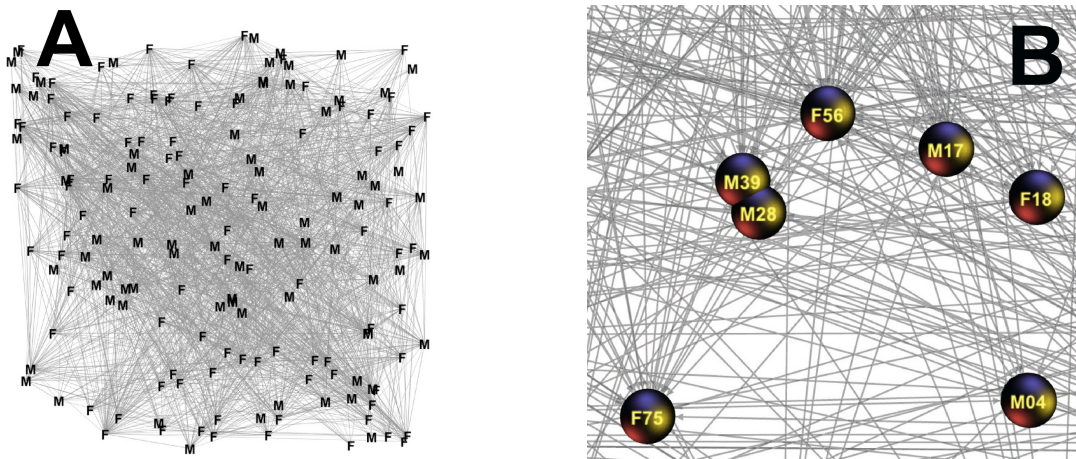


Figure 6: A) Network graph of student Friendfeed subscriptions drawn by Gephi. B) Expanded view of a small section of the same network to illustrate the complexity of the interactions being analyzed. In these diagrams, M represents male students and F female students.

In order to examine the influence of academic staff within these networks, we used Gephi to perform statistical analysis of networks with and without staff included (Table 1). By comparing the network statistics analysed with and without the presence of academic staff, we conclude that the presence of academic staff had little influence on overall network structure, indicating that these are predominantly student-centred peer networks. Modularity analysis did not indicate the existence of any clear sub-communities within the overall network. This means that there are no statistically significant sub-communities within the overall network, for example,

based on gender, language, etc. This is a clear indication that the network is an effective means of information transmission to a large group and does not exclude any particular demographic within the cohort. Although not universally positive, much of the student feedback gathered via the course questionnaire supports the view that Friendfeed encouraged the formation of peer support networks:

- "I thought that Friendfeed was useful as you could ask questions and it was really helpful if you were unsure of something."
- "Friendfeed was fantastic for asking for advice and keeping up to date with how everyone felt about the module. It was also interesting to see some of the links that were posted."
- "I thought using Friendfeed was quite helpful as it helped me to engage with the modules more. Using Friendfeed also helped me with topics that I didn't understand."
- "Friendfeed was really useful in collaborating with our peers doing the same course and the same work, and giving advice and asking questions on certain areas of the course."
- "Friendfeed very useful as a tool for communicating with lecturers and other students. Very useful as a support network."
- "Really useful for keeping in touch with coursemates, helping others and seeing useful links from other people."
- "Friendfeed played a major part in making my performance during the second semester a success. The build up of interesting facts enhanced my learning and also my understanding of the topics prior to the exams."

	Student Subscriptions	Student + Staff Subscriptions	Student Comments	Student + Staff Comments
In/Out Degree	35	34	24	24
Network Diameter	6	6	6	6
Graph Density	0.10	0.08	0.07	0.07
Average Clustering Coefficient	0.30	0.27	0.24	0.24
Average Path Length	2.3	2.4	2.5	2.5
Modularity	0.35	0.26	0.34	0.31

Table 1: Network statistics with and without the presence of academic staff calculated using Gephi (<http://gephi.org>). In/Out Degree represents the number of connections (edges) to other nodes in the network; Network Diameter is the longest path between any two nodes in the network (connected nodes have a distance of 1); Graph Density measures how close the network is to completeness (a graph with all possible connections between the nodes has a density of 1); Average Clustering Coefficient is measure of the likelihood that two associates of a node are associates of themselves. A higher clustering coefficient indicates a greater "cliquishness" - the "small worlds" effect; Average Path the average of distances between all pairs of nodes in the network; Modularity is a means of community detection within a larger network. Gephi uses the Louvain method for community detection (Blondel et al, 2008). A modularity value of 0.4 or greater is considered to indicate meaningful communities within the network.

*Would students' engagement with the tools extend beyond the life of the module?*

Perhaps the most significant outcome was that approximately 15-20% of students continued to use the service more than one month after the end of the assessment period. Although this may not seem a high proportion, it represents a considerable increase from those who used the former e-portfolio system described above, where after the end of the assessed period less than 1% of students continued to use the software. This observation justifies the contention that the engagement factor of social network scaffolding is a positive force which should be more highly used in education. At this time, it remains to be seen how many will continue to utilise the service in future years, and to what extent different year groups will interact.

*How would academic staff respond to the introduction of the portfolio facilities?*

Because the academic input was distributed across many frequent short inputs, it is difficult to estimate the total amount of staff time involved in interactions with students on the network. Effectively, the staff involved in supporting students in the network integrated this commitment into their daily workflows whenever they were online. Our approach to developing this system has been to utilize a core group of highly motivated and knowledgeable staff to roll out the system. In time, it is hoped that the knowledge gained on this project will be incorporated into the institutional staff development programme, which has already begun to address many of these issues. In reality, we anticipate that there will be a student-led trickle down effect arising from the introduction of these tools into teaching, eventually changing academic practices, much as the introduction of the institutional VLE changed teaching practices a few years ago.

## **Discussion**

No matter what their educational potential, software tools are only useful to students if they are used. What makes tools acceptable? Our research indicates that students gravitate strongly towards tools which are:

- Trusted Brands (e.g. Google, Wikipedia)

- Easy to use, with a shallow initial learning curve (e.g. YouTube)
- Display "stickyness" by rewarding users through dynamic social status updates (e.g. Facebook, Friendfeed)

Tools without these attributes (most commercial e-portfolio systems?) are rapidly dropped by the majority of students when no longer driven by assessment pressure. Students are frequently willing to trade-off desirable features such as privacy to access tools which have these attributes, but unwilling to invest in tools which are unattractive or have a steep learning curve. We were particularly encouraged by the evidence we have been able to gather for the emergence of student-centred peer networks in these social portfolios. The similarities between these social portfolios and the suggested "strongest model of self-assessment, learning contract design" proposed by Taras is interesting (Taras, 2010). Taras' suggested components of weekly discussion cues, peer feedback, and original reviewed objectives and methods on display in the form of public discussions are an exact description of how we implemented our social portfolios. We were impressed by the maturity shown by students in their online behaviour.

No problems in terms of abusive or inappropriate behaviour were observed during our trial. We attribute this to two reasons. The first is the presence of a backchannel provided by private direct messages within the Friendfeed system, as well as other private channels such as email, SMS or IM. Second, the implicit contract set out when the portfolios are introduced as a personal and professional development tool, separating the predominantly public professional online identity (on Friendfeed) from the private social identity (on Facebook).

In the years since Marc Prensky characterized the large number of students that have grown-up immersed in technology as digital natives (Prensky, 2001), his concept has received much criticism (Burhanna, et al, 2009; Helsper and Eynon, 2010). Although there is undoubtedly a range of digital affinity/ability within HE students, the ease of use of social portfolios removes the focus from the technology onto the content and purpose of reflection in learning. If there is a difficulty in implementing these rather open-ended systems on a large scale, it is with the role

and abilities of academic staff rather than with the students. Social network tools are rapidly approaching the phase of invisibility:

*Communications tools don't get socially interesting until they get technologically boring... It's when a technology becomes normal, then ubiquitous, and finally so pervasive as to be invisible, that the really profound changes happen. (Shirky, 2008).*

In one sense, it is clear what the future holds for education - teaching more students with less input of time and money. What is less clear is how this can be achieved. One answer is to reduce assessment load for both students and academic staff. One way in which this can be achieved by still providing high quality timely feedback is by moving towards peer assessment/support scaffolded by social tools. In this area, the main problems to be faced may not arise from students but from digitally disenfranchised academic staff struggling to negotiate how to interact with students in these free flowing online environments, and from institutions struggling to retain perceived control of the learning process. The present generation of social tools may not last, but they will surely be replaced by subsequent developments with similar attributes which might be even better suited to reflection and PDP, e.g. distributed social profiles such as Diaspora ([http://en.wikipedia.org/wiki/Diaspora\\_\(software\)](http://en.wikipedia.org/wiki/Diaspora_(software))). These emerging tools represent a move away from big box networks such as Facebook, and such distributed social clients offer more ownership and empowerment to students, which surely represents the future of e-portfolios.

## **Acknowledgements**

We are very grateful for funding which contributed to this work received from the University of Leicester Teaching Enhancement Fund and the HEA UK Centre for Biosciences. We are also grateful to Neil Saunders, CSIRO Mathematics, Informatics and Statistics, NSW 1670, Australia, for his help and advice with analysis of Friendfeed data. Many other people have also contributed to the development of the ideas outlined here through online discussions over the past several years.

## References

- Blondel, V., Guillaume J., Lambiotte, R., Mech, E. (2008) Fast unfolding of communities in large networks. J Stat Mech: Theory Exp 2008: P10008  
<http://findcommunities.googlepages.com> [Date of Consultation: June 15 2010]
- Burhanna, K.J., Seeholzer, J., Salem J. (2009) No Natives Here: A Focus Group Study of Student Perceptions of Web 2.0 and the Academic Library. The Journal of Academic Librarianship. 35 (6): 523-532.
- Cann, A.J. (2007) Podcasting is Dead. Long live Video! Bioscience Education E-journal 10-c1 <http://www.bioscience.heacademy.ac.uk/journal/vol10/beej-10-c1.aspx> [Date of Consultation: June 15 2010]
- Ferster, C.B. & Skinner, B.F. (1957) Schedules of reinforcement. New York: Appleton-Century-Crofts.
- Goad, Robin. (2009) Top 100 student websites in the UK. Hitwise Intelligence  
[http://weblogs.hitwise.com/robin-goad/2009/06/top\\_100\\_student\\_websites\\_uk.html](http://weblogs.hitwise.com/robin-goad/2009/06/top_100_student_websites_uk.html) [Date of Consultation: June 15 2010]
- HEFCE (2005) HEFCE strategy for e-learning.  
[http://www.hefce.ac.uk/pubs/hefce/2005/05\\_12](http://www.hefce.ac.uk/pubs/hefce/2005/05_12) [Date of Consultation: June 15 2010]
- Helsper, E.J. and Eynon, R. (2010) Digital natives: where is the evidence? British Educational Research Journal. 36(3): 503-520.
- Higher Education Academy. The National Committee of Inquiry into Higher Education (1997) (aka 'The Dearing Report') Higher Education in the Learning Society: Report of the National Committee of Inquiry into Higher Education. London: HMSO. <http://www.leeds.ac.uk/educol/ncihe> [Date of Consultation: June 15 2010]



Long, A. (2010) Social Media overtakes Search Engines. Hitwise Intelligence  
<http://weblogs.hitwise.com/alan-long/2010/01/post.html> [Date of Consultation: June 15 2010]

Mortiboys, A. (2005) Teaching with Emotional Intelligence: A Step-by-Step Guide for Higher and Further Education Professionals. Routledge. ISBN 0415350883

Penn State University (2006) MOSEP e-portfolio Tutorial: Assessment of e-portfolios. [http://www.wikieducator.org/MOSEP\\_Module\\_4/session2](http://www.wikieducator.org/MOSEP_Module_4/session2) [Date of Consultation: June 15 2010]

Prensky, M. (2001) Digital natives, digital immigrants part 1. On the Horizon, 9 (5): 1-6.

Shirky, C. 2008. Here Comes Everybody: The Power of Organizing Without Organizations. Penguin Group, ISBN 978-1-59420-153-0.

Stutzman, F. (2007a) Google OpenSocial and Situational Relevance.  
<http://fstutzman.com/2007/11/02/google-opensocial-and-situational-relevance> [Date of Consultation: June 15 2010]

Stutzman, F. (2007b) Social Network Transitions.  
<http://fstutzman.com/2007/11/05/social-network-transitions> [Date of Consultation: June 15 2010]

Taras, M. (2010) Student self-assessment: processes and consequences. Teaching in Higher Education 15(2): 199-209.

Universities UK (2007) Beyond the honours degree classification: The Burgess Group final report. Universities UK, ISBN: 978 1 84036 164 6, 2007  
[http://bookshop.universitiesuk.ac.uk/downloads/Burgess\\_final.pdf](http://bookshop.universitiesuk.ac.uk/downloads/Burgess_final.pdf) [Date of Consultation: June 15 2010]

Zeiler, M.D. (1968) Fixed and variable schedules of response-independent reinforcement. *Journal of the Experimental Analysis of Behavior*, 11, 405–414.