A case study-based investigation of students' experiences with social software tools

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Abstract

The term 'social software' covers a range of tools which allow users to interact and share data with other users, primarily via the web. Blogs, wikis, podcasts and social networking websites are some of the tools that are being used in educational, social, and business contexts. We have examined the use of social software in the UK further and higher education to collect evidence of the effective use of social software in student learning and engagement. We applied case study methodology involving educators and students from 26 initiatives. In this paper, we focus on the student experience: educational goals of using social software, benefits to the students, and the challenges they experience. Our investigations have shown that social software supports a variety of ways of learning: sharing of resources, collaborative learning, problem-based and inquiry-based learning, and reflective-learning. Students gain transferable skills of team working, negotiation, communication, and managing digital identities. Although these tools enhance a student's sense of community, but the need to share and collaborate brings in additional responsibility and workload, which some students find inflexible and 'forced'. Our findings show that students have concerns about usability, privacy, and the public nature of social software tools for academic activities.

Keywords: case study methodology, collaboration, community building, e-learning, Social Software, Web 2.0, social networking, user-generated content.

1   Introduction

The term Web 2.0 or 'social software' covers a wide range of software tools which enable users to interact and share with other users, primarily via the web. The Web 2.0 or 'read/write web' is in contrast with the original 'read only' web (e.g. website of an individual or an institution) where users were passive consumers of other people's information. The key aspect of a Web 2.0 or social software tool is that it involves wider participation in the creation of information which is shared (e.g. boyd, 2007, Franklin and van Harmelen, 2007). Social software tools allow users to gather resources, share the resources with others, and facilitate active participation of each user. Following Parameswaran and Whinston (2007) we define social software as a category of 'applications and services that facilitate collective action and social interaction online with rich exchange of multimedia information and evolution of aggregate knowledge' (p. 762). One core attribute distinguishing social software from other online applications is that content is user generated; hence, this content is highly dynamic with frequent, often unpredictable changes. In this creation of shared content in a networked participatory environment, the barriers between producers and consumers are broken down and the participants become users as well as producers of information and knowledge (Bruns, 2008). These tools support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship (Anderson, 2008). Social networking websites such as Twitter, Facebook, MySpace,YouTube, slideshare and Flickr, and social bookmarking sites (e.g. Delicious) are examples of some of the applications that are being used to share and collaborate in educational, social, and business contexts.

This paper presents the key findings from a Joint Information Systems Committee (JISC)-funded project in which we investigated the use of social software in UK further and higher education. The findings are of interest to both policy makers and educators in further and

higher education who are considering the use of social software as an aid to teaching or as a means of encouraging, motivating or helping to retain students. We investigated 26 initiatives where social software tools have been employed. In this paper, we focus on the perceptions and experiences of students: benefits to the students, and the challenges experienced by students.

In the next section entitled 'Background', we situate our research in the literature and list its aims. Section 3 discusses the case study-based research methodology that was used to collect data and the processes that were adopted to analyse the data that was collected. In Section 4, we present the data analysis and discuss the benefits and challenges of adopting social software in teaching and learning. We have included examples or vignettes from the various case studies that we have investigated. In Section 5, we draw out the key findings from the data analysis. In Section 6, we reflect on our research and propose ways of taking this work forward.

Terminology: The term 'social software initiative' in this paper implies a project or a learning activity or a situation where a social software tool is employed. We have used the term 'educator' to imply any colleague (tutor, lecturer or an instructional designer) who has adopted social software tool(s) in an educational context and led the initiative. The term 'student' implies the learner in a social software initiative.

2   Background

The growing interest in social dimensions of learning has led to institutions adopting virtual learning environments (VLEs), which incorporate collaboration and communication tools such as wikis, blogs, forums and chat. The interactions in the online environment, for example through collaborations or discussions using forums, or in wikis, or on blogs, enable knowledge to be constructed individually but mediated socially (Anderson, 2008). More

recently, publically available web-based social software applications such as Facebook, GoogleDocs, Delicious, and Flickr have been adopted in learning and teaching.

Social software has the affordances of interconnections, content creation and remixing, and interactivity (Greenhow et al., 2009). For example, a blog enables a learner to create content, share it with others, receive comments, connect with other websites and blogs through links, integrate multimedia assets, and receive updates from other websites through RSS (http://www.whatisrss.com/) feeds. Blogs, wikis, social networking sites such as Facebook, video-sharing sites such as YouTube, or photo-sharing sites enable students to post their contributions, view and analyse the materials others have created, and engage in a dialogue through posting reviews, or giving response to others' comments. These affordances of social software facilitate a 'participatory culture' amongst students and provide "low barriers to artistic expression and civic engagement, strong support for creating and sharing one's digital productions" (Jenkins, 2006, p. 3), a sense of social connections "or at least caring what other people think about what one has created" (Jenkins, 2006, p. 3), and a belief that contributions matter.

The interactivity of Web 2.0 or social software, therefore, provides two-way communication and lends itself to collaboration, co-operation and the development of a learning community (Shirky, 2008). This is in contrast with the more traditional approach of individuals working in isolation and often in competition with each other. Anderson (2005) considers that social software offers freedom to a student to engage in a learning relationship with other students, and facilitates collaboration between students who are separated by location and time. The latter advantage is a tremendous benefit to students engaged in distance learning programmes. The underlying pedagogy of social software tools has been considered by Dalsgaard (2006) who argues that social software can support a social constructivist approach to e-learning by providing students with personal tools and engaging them in social networks,

thus allowing learners to direct their own problem-solving process. Social constructivism emphasises the importance of the learner being actively involved in the learning process and knowledge is constructed in shared endeavours with other learners.

Boyd (2005) discusses the affordances of social software in terms of the three types of support that it provides:

1. Support for conversational interaction between individuals or groups, from real-time instant messaging to asynchronous collaborative teamwork

2. Support for social feedback, in which a group rates the contributions of others, producing a digital reputation for participants

3. Support for social networks to explicitly create and manage participants' personal relationships and to help them develop new ones.

These affordances of social software can enable learning to be personally meaningful, collaborative, and socially relevant. Some of the perceived benefits to the students by using these tools are developing the skills of communication, problem solving, research and collaborative working which can equip students well for the world of work (e.g. Minocha, et al., 2008).

To enhance collaborative learning and community building amongst students, educational institutions are making use of:

• tools that facilitate collaborative authoring, such as blogs and wikis

• applications that enable sharing of bookmarks, photographs, and videos, such as Delicious, Flickr and YouTube

• social networking platforms such as Facebook, Elgg and Ning

• 3-D virtual worlds, such as Second Life that facilitate synchronous collaboration.

The social software tools, however, need to be well grounded within the pedagogical activities of courses (Tapscott, 2009) or within the community-building or participatory inititiaves in an educational institution (for example, setting up a group on Facebook to collect feedback on a particular institution-wide issue).

The published research on the effectiveness of social software in teaching and learning has so far primarily focussed on the use of forums or discussion boards (Garrison and Arbaugh, 2007), blogs (e.g. Kerawalla, et al., 2009) and wikis (e.g. Minocha, et al. 2008). However, with the growth in adoption of social networking tools such as Facebook and Twitter in teaching and learning, there is a need to investigate the reasons for adoption of the tool(s), the benefits the students perceive, and the challenges they face. The empirically grounded findings of students' perceptions and experiences will help to inform institutions, policy makers and educators who are planning to introduce social software tools in their courses and institutions. Furthermore, there are few guidelines for good pedagogical practice related to the design and assessment of learning activities employing social software tools. Thus, there is a need to investigate :

- How learning activities are designed to include social software tools in teaching and learning

- The benefits and problems associated with the use of social software tools

- The role of these tools in enhancing the learning and teaching experience.

Therefore, our project set out to: identify situations (as case studies) where social software tools had been employed in further and higher education; collect information about the experiences of the staff and students involved; and analyse that information to uncover the benefits, problems and issues (and their resolutions) associated with the use of social software. In this paper, we will focus on the project findings related to the student experience.

3   Methodology and Implementation

We followed a case study methodology for data collection. A case study is an empirical enquiry that investigates a phenomenon within its real-life context using multiple sources of evidence (Yin, 2009). A case study methodology helps to answer the 'how' and 'why' questions about a contemporary set of events over which the investigator has little or no control. Applying case study methodology involves development of detailed, intensive knowledge about a single 'case', or of a small number of detailed 'cases' (Robson, 2002).

In our project, the case study methodology involved an in-depth investigation of a number of 'cases', or initiatives, where social software tool(s) had been adopted to support students. Data collection in each case study was undertaken by carrying out visits to the participating institution and by conducting semi-structured interviews and/or focus groups with educators and students. The interviews were guided by two interview templates, which we developed for students and educators, respectively. The interviews were audio-recorded and transcribed. The analysed data for each case study was presented in a common template (structure) that we developed. The case study template had the following headings: Fact box giving details of the course or programme, duration of the social software initiative, tool(s) employed, educators involved, number of students and the delivery mode (e.g. face-to-face, distance-education); details of the initiative including the background and rationale; and benefits and issues related to the initiative.

3.1   Gathering the case studies

A team of seven consultants (investigators) carried out investigations over five months. In order to enhance the reliability of our research design, it was important that all investigators followed the same set of procedures and rules. Further, we (core project team) did not have an opportunity to bring the investigators to one central location for training (they were spread

all over the UK). We wanted to make the instructions as detailed as possible so that they could train themselves for case study investigations by going through the materials that we send to them. Therefore, we developed an 'investigator's pack', which contained the instructions for carrying out the investigations, interview templates along with expected data protection, and ethical procedures. After the investigators had completed a draft report for each of the case studies, they sent a copy to the respective participating institution (primary contact person) for feedback, comments and any further inputs.

We investigated 26 initiatives in this project. Most of the case studies use a number of communication and collaboration tools, but generally, the initiative is centred on one or two primary social software tools. There were a variety of primary social software tools such as wikis, blogs, social networking sites (e.g. Facebook, Ning), photo-sharing sites (e.g. Flickr), podcasts, social bookmarking (e.g. Twitter), 3D virtual worlds (e.g. Second Life), micro-blogging (e.g. Twitter), discussions forums, web-conferencing (Skype), and GoogleEarth. Amongst the 26 initiatives, one of the initiatives was set up for Doctoral students, 5 in post-graduate programmes, 11 in under-graduate programmes, 2 were on certificate part-time courses, 2 in Further Education colleges, and there were 5 initiatives at institution level (e.g. Facebook group to collect feedback from the staff and students on the plans for the proposed (new) library building in the university). In each of the initiatives, especially when the initiative was introduced in a course, the educators had chosen the social software tool to meet with the learning outcomes (including skills development) of the respective course.

The report and case studies are available in the public domain (please see http://www.jisc.ac.uk/whatwedo/projects/socialsoftware08.aspx accessed November 14 2009).

3.2 *Data analysis and synthesis*

Our main motivation in this project has been to investigate and collect evidence about the role of social software in student learning and engagement. Six of the fifteen sub-questions of the research project and relevant to the empirical research being reported in this paper are as follows:

Benefits of using social software

- What are the educational benefits of using social software?

- What are the social and other non-educational benefits of using social software?

- What are the positive implications of employing social software tools, which extend beyond the initiative?

Challenges that they may influence a social software initiative

- What are the concerns of students regarding the use of social software tools?

- What are the concerns of students when the contributions in the tools are in the public domain?

- What are the workload issues for students?

Our research questions (listed above) provided the lens to analyse the data from the participants. To start the process of data analysis, an independent inductive analysis of the case study data was undertaken by the core project team members to identify the themes, sub-themes, and any causal or interrelationships between the themes. The inductive or thematic analysis (Braun and Clarke, 2006) involved each of the team members independently reading the case studies in detail to gain an understanding of the social software initiatives and the obstacles that had been described in the data.

After this independent data analysis, a one-day workshop was organised and attended by the core team members. This focused on looking across the cases to find recurring themes in the cases that had been analysed. This activity produced a long list of the themes and sub-themes, which had an impact on the social software initiatives.

4 Student experience with social software tools

The analysis is presented as answers to our research questions. While discussing each of the themes, snippets or vignettes from the case studies are included.

4.1 Benefits of using social software

In this section, we will discuss the pedagogical and social benefits of employing social software.

What are the educational benefits of using social software?

Early recognition of students' requirements and educator intervention: In a blogging case study, the educators found that knowing more about the student's requirements through the blogs saved time and was beneficial, as they were able to better plan the face-to-face tutorials to directly address students' needs. In the Twitter case study, the educator mentioned that use of Twitter enabled better understanding of the students' needs, and other interactions (face-to-face or in email) could be accordingly adjusted.

In a course that involved wikis, blogs and social bookmarking, the educator remarked that he had a better understanding of the students' needs by reviewing their contributions in the social software environments. The students' contributions also helped identify the aspects of the subject area that made them enthusiastic.

In several case studies, educators mentioned that they were able to give early feedback to the students based on the students' online contributions prior to the students' submission of

formal assignments. In general, the feedback and response by the educators has been more prompt for online activities, especially if there was only one place to go to (e.g. one wiki on the course, or one group in Flickr, or one group in Facebook). In the Twitter case study, the educator as well as fellow students could offer almost instantaneous support to a student's query without the need for formal meetings.

In two cases, educators discussed scenarios where in a collaborative working environment, the educators or fellow-students were able to pick up early signs of a student 'giving up' the course, or a student being unhappy with some situation, or if someone was behind in their studies. Educators reported that early and timely interventions had helped to reduce the dropout.

Socialisation: In wiki and blog case studies, sharing of photographs and personal profiles in the wiki or blog at the start of a course both in campus-based and distance-education, helped in socialisation (an antecedent for collaborative learning) of the students (Nicol, et al., 2003). The tutor on the digital photography course remarked that the initiative gets the students talking at the start of each class: 'Adults [adult learners] are more reluctant to discuss work ... when they come in they say "I saw your photographs on Flickr, they are really good"... they start discussing them right away.'

Collaborative learning: Students highlighted collaborative working as a valuable and enjoyable process, giving benefits they would not normally gain when working individually. Receiving positive comments on the photographs and reference to some aspect of photography (such as angle or depth) was very encouraging for the students. Some other benefits included sharing ideas and approaches on a common learning space (eg a group blog) which helped clarify a student's understanding of course concepts; sharing resources in a social bookmarking service; or working together on a project in a wiki.

Team working: In three cases, wikis were employed to enable team working, a place where each of the students could see what others were doing, and to a have a web-based collaborative space that was not tied to a particular computer or geographical location.

Engagement of students: Both students and staff said that the use of social software increased enjoyment. It was seen as more engaging for students, and a more interesting way for them to study their subject, and led to better understanding of the course concepts. For example, the physiotherapy students worked in groups to create podcasts related to the (potentially dull) subject of pathology. The students described this as 'fun' and said that it 'did not feel that much like work'. In the same vein, a dentistry student in one of the cases said, about the department's blog: "It keeps it sort of real; it's such a stressful course, when he makes it so light-hearted it makes you feel involved.' In another case, the use of Facebook (which the students were already using for personal and social tasks, and visited regularly) for course-related information resulted in students submitting their course work on time.

Development of a community: In the cases that we analysed, building of a community was a key aim and also a key perceived benefit. In a history course, the students suggested that seeing the posts on the blog and the shared bookmarks in Delicious helped to give them a sense of community with other students in the group. In a teacher-training course where students are away from the university for training in schools, the students felt that blogging helped them to feel a part of a community. They were able to share any fears or concerns about not doing things 'right' by using the blogs to document their experiences and reflections.

Becoming aware of different approaches to learning: When carrying out collaborative work, having contributions visible to the group or cohort of students, and to the educator makes it easier to judge individuals' contributions. This can aid assessment, and also enable support

and encouragement to be provided on an individual basis. It was perceived to be useful by students to see how other students approach learning tasks.

In the teacher training course, looking at each other's blogs helped the students to identify different approaches to their teaching. In two cases (digital photography courses), the students were exposed to a range of photographic styles by looking at each other's work. In the wiki-based courses, the students were able to plan their own contributions better after looking at the resources that other students or groups had collated in the shared space.

Problem solving: In many cases that we investigated, students have found the collaborative spaces of social software tools very useful for problem solving and receiving support (eg by posting queries on their blogs, or by using the Twitter, or by posting messages in the Facebook group). By sharing their experiences, the students felt that they were not the only ones struggling and sharing problems helped them in self-reflection.

Inspirational learning: At several institutions, students found that looking at other students' work inspired them and 'you can judge yourself… how well you are learning'.

Reflective learning: Students mentioned that looking at others' work assists with reflection and helps to identify the areas for improvement and to provide better understanding of course concepts.

Sense of achievement: Social software also provided a sense of achievement for students. They could upload their work online, where other students could see it, and comment on it. Moreover, in an open environment, members of the public all over the world would also be able to see the work (eg photographs on Flickr on the photography course). Receiving comments from other professional photographers on Flickr was highly motivating for students who had submitted their photographs as a part of their course.

Sense of control and ownership: The creation of resources in students' personal spaces on blogs and wikis gave students a sense of ownership and control towards their learning and future career prospects.

Peer-to-peer support and feedback: The collaborative workspace in the wiki facilitated the discussion of each other's work by the students. The peer feedback enables students to clarify their understanding and to reflect on their individual contributions and learning; a student mentioned 'it wasn't until I received feedback that I realised that some of what I had written was open to misinterpretation.'

Being conscious that the educator and fellow students can see their online work: When students' work is visible to each other, and particularly when it is visible to the world via the Web, motivation can be increased leading to better quality of work. When students know that other students, and potentially any member of the public, will see their work, they can be motivated to produce work of a high quality. Working with visible artefacts such as photos, also creates a focus for the interactions, which helped learning and community building in the two case studies on digital photography.

Our conclusions are consistent with previous studies on blogs (e.g. Lamshed et al., 2002 and Mortensen and Walker, 2002) where they reported that writing a blog forces a student to confront their own opinions and contemplate how their views might be interpreted and reflected upon by others. Some students in Lamshed's study mentioned that the process of blogging 'forced' them to improve their writing skills because of the need to write for a public audience.

Information management: Being able to integrate video clips, photos, hyperlinks, music clips within wiki pages or blogs was perceived as being useful and providing a rich learning experience by students (in Schmidt, 2007, the information management characteristics of

social software are discussed). The students in one of the cases expressed that being able to structure the content with multimedia assets in a wiki 'mirrors the process of learning'.

Social bookmarking facilities can enable the students to collate their resources over a period of time and across courses and institutions.

What are the social and other non-educational benefits of using social software?

Student engagement in university initiatives: In one of the universities, the social networking site was used for discussions around smoking policy and carbon footprint; this was the first time that the staff and students developed a combined online voice which went on to influence the university's policy. In another case of a university-wide initiative, a Facebook group was set up to receive inputs and feedback from the students on the proposals for a new learning space in the library.

In some of the initiatives, there was enthusiasm among the students that the institution, the course, and the educators were breaking new ground by embracing social software tools and emerging technologies.

Overcoming communication difficulties in face-to-face environments: In two case studies, it was mentioned that students who were hesitant to ask questions or express themselves in face-to-face environments were more comfortable in asking questions in social software environments.

Overcoming isolation and geographical distances: In distance education or where students are collaborating at a distance or in part-time courses, social software tools can help overcome isolation, enhance social cohesion through a pre-induction support group, and enable collaborative work even when the students are at different locations. In one of the case studies, the aim of the social networking site was to address the problem of building a community across multiple campuses of the university.

What are the positive implications of employing social software tools, which extend beyond the initiative?

Informal relationships between educators and students: In the case study which employed Second Life, a 3D virtual world, the students felt that avatar-based representation in Second Life resulted in them being more sociable with their tutors. Also, in this case study, students shared their Facebook profiles with the tutor. The tutor mentioned to us about this increased the level of familiarity with his students through Second Life and Facebook. There were similar sentiments expressed in three other case studies involving Facebook, blogs and Twitter, respectively.

Development of transferable skills for studies and workplace: In some of the practice-based courses such as software engineering, team engineering, digital photography, the initiatives were intended to enable students to gain experience of social software tool(s) and for them to explore the potential of the tools with the expectation that they may be able to use this experience in their studies and in their workplaces in future.

Social software tools are increasingly being used in the workplace, for example, wikis as intranets, blogs for marketing, podcasts for customer education, web conferencing for meetings, and social networking groups for campaigns, and for conducting surveys. In software engineering practice, wikis are increasingly being used for distributed and collaborative working (Farrell, 2006) and this was one motivation for introducing wikis in the software engineering course. Further, using social software tools assists students develop team-working skills and online collaboration and communication skills, which will help them to fit easily into work settings (see Minocha and Thomas, 2007).

Development of virtual communities: Social software tools provide a platform for development of communities (Shirky, 2008). For example, the comments section on Flickr

allows people to converse about photographs. The basic question, 'how did you do that?' seems like a simple request for information, but it is also a spur to a community of practice, where people can start sharing their experiences of photography.

Social networking sites were, in many institutions in our study, seen as a way of giving students control of their own community. An educator said: 'Think about using this kind of a tool [Open Studio, an in-house university-supported tool similar to Flickr] as a way of sparking some enthusiasm and helping your students to develop their own communities.' The use of public social software tools also provide a means of building and maintaining a community of alumni, who can continue to be involved with the university and their department after the course or programme ends. In the course using Open Studio, the community lasted beyond the duration of the course and students have set up their own groups on Flickr (outside the course tool – OpenStudio): 'It has been a course which has engendered a sense of community which has lasted outside the course, which is unusual in the OU [Open University, UK].'

Portability of resources: Students on short courses, or those who move to other educational institutions can have access to the resources even if they leave the institution; for example, bookmarks stored on a social bookmarking site such as Delicious, or a portfolio on the wiki. In the broadcasting course in one of the case studies, students plan to continue to develop their sites (wikis and blogs) after the module ends to enhance their future career prospects. In the history course, the educator felt that the resources collected by the students on the social bookmarking site (Delicious) could be used by students in the future on other projects/courses.

Developing an e-portfolio for future employment: The outputs of their studies, e.g. essays, poems, records of their skills audits and skill development, are portable if they are in tools such as wikis and blogs, and can be shown to prospective employers.

4.2   Challenges for students in a social software initiative

In this subsection, we discuss, through examples, some of the educational, social, technological and organisational challenges, which we came across in the case studies.

Concerns about unequal participation in group activities: As it is common in group-activities, students are often concerned that group members are not contributing equally to the work in wiki-based courses. They may also be unhappy with the groups to which they have been allocated.

Negative comments or non-constructive feedback by fellow students: In the digital photography course, some students found it difficult to provide constructive feedback and there have been occasional arguments (flames) in the forums. To counter this problem more guidance about positive commenting has been added to the course material and moderators have been advised on how to help students to be constructive.

A student on a software engineering course using wikis said: 'some students just weren't professional and felt that they had the right to criticise other student's work without being constructive.'

Selective commenting and being forced to comment: In one of the courses, students mentioned about giving comments to fellow students whom 'they liked': 'I only commented on people who I liked. It was so forced because we had to comment on people's work, I felt I was constantly struggling to write something about somebody's work'. In some of the cases, students felt that they had to be guarded and polite. As a result, some students felt that they were not receiving useful critical comments.

Lack of socialisation: In a couple of courses using wikis and blogs, students were not sure how critical they could be in their comments to fellow students' contributions, so they were either very polite or did not comment at all. In a distance-learning course, the students

mentioned about 'not knowing one another well enough' to be able to critically comment. In the distance-learning digital photography course, the feature of personal profiles was introduced to aid socialisation after receiving feedback from students. In courses with some face-to-face element, online socialisation was not considered necessary for effective collaboration.

Lack of trust of peer feedback: In the digital photography course, some of the students stated that they expected feedback from the tutor ('an expert input') and that they did not trust their fellow students to review the photographs. Similar concerns were expressed in the physiotherapy course where students were asked to peer-assess each other's podcasts.

Ownership issues about contributions in a shared space in a group-activity: The use of wikis raised students' concerns about shared production and editing each others' work. In the wiki, the 'ownership' of contributions can be unclear, and perceptions of ownership can vary among group members.

Lack of student engagement: In some cases, the students felt that if they left a comment on a photograph or on a wiki contribution, or left a question (for example, how the photo effect was achieved), the answers were not coming through all the time which the contributing students found frustrating or demoralising. There were some students who felt nervous about saying something incorrect online or looking foolish in some way. A community needs a critical mass of members for it to work, and in a couple of case studies, due to poor participation in the university-wide social networking site (based on Elgg), a student community did not evolve.

Resistance to sharing artefacts in the public or collaborative space: In one of the digital photography courses, students were uncomfortable about uploading on Flickr the photographs they were taking on the course as they felt that they had no control about who

was looking at the photographs and using them. The concern about sharing resources was raised particularly where students were asked to share reflections with a group of people on the blog in another course who were potentially going to comment on what had been written. The students also considered commenting on others' reflections uncomfortable. Students were initially hesitant to share their bookmarks on Delicious in one of the case studies, as they were concerned about 'giving away' what they had searched.

Student over-enthusiasm or non-interest: In the course using the 3-D virtual world Second Life, it was felt that some students were too enthusiastic about using Second Life and spent too much time there, although nothing adverse was noted because of this. In the teacher-training course using blogs, students were initially rather resistant to using the blog but quickly found it was useful and supportive and became regular readers/contributors. It is sometimes the interest that educators show and the support they provide that can encourage students to use the tool. However, this situation can have a disadvantage too – that if an educator moves to another role and is no longer is associated with the course, the students may not be as motivated as before. Our focus group with students revealed that students on the hair salon management course were less enthusiastic about using the course wiki when the educator who set up the initiative moved to another role in the college.

Collaboration perceived as onerous in flexible part-time distance education: Students find that collaborative activities are not in line with the philosophy of flexible learning, and learning in one's own time in part-time distance education (eg in the case studies investigated at the Open University, UK).

Privacy versus community building: If the Twitter accounts or blogs are kept private or open to only a few selected users, then there could be a negative impact on group dynamics (concerns expressed in Twitter case study) as there will be limited communication.

Personal (social) and academic boundaries: There was some concern in several institutions among students and educators that the use of social software blurred boundaries between personal and academic life. For example, in one of the case studies, the students admitted that the Facebook group set up for pre-induction was useful but they did not want university interactions in Facebook to continue once they had joined the university. In contrast, in two other case studies, the educators were allowed access to their students' profiles on Facebook but in another case study, some students were hesitant about interacting with their educators on Facebook as they perceived Facebook as a social space rather than an academic space.

Students want to remain anonymous in the public domain: In one of the case studies, the students were asked to annotate their entries onto a social bookmarking website with their names. Some of the students were not willing to reveal their identities, which meant that some entries were anonymous. This had implications for checking a student's involvement and progress on the course.

Preference for individualistic learning rather than collaborative learning: Adult learners or part-time learners who are handling work and studies at the same time generally prefer learning at their own pace and in their own time. They can be resistant to collaborative work as it means that they may have to work at a time that suits others, a commitment which they generally find hard to meet.

Workload issues: Students reported lack of time or being under pressure from other responsibilities as reasons for being unable to contribute effectively. Since many students are active on Facebook, changing to another social networking site within the university was not considered useful. Students faced the dilemma of balancing the time between Facebook and university's social networking site.

In a wiki-based distance education course, the students were concerned about the conflict between the flexible learning which they had expected on a part-time, distance-education course and the collaborative activities involving the wiki which had to be synchronised amongst the participants. In one of the blog-based courses, students are encouraged to read the blog regularly and make posts, which the students found onerous.

5   Discussion

Our analysis has shown that there are three characteristics of the social software tools which facilitate interactions with educators and fellow students. Table 1 shows that these three characteristics correspond to three kinds of support provided by social software (Boyd, 2005) discussed earlier in this paper.

Table 1. Characteristics of social software and the types of support provided by social software

Characteristics of social software	**Types of support provided by social software (Boyd, 2005)**
space where the contributions are visible to fellow-students and educators and who can provide feedback and comments	support for social networks to explicitly create and manage participants' personal relationships and to help them develop new ones.
space where artefacts such as photographs, audio and video recordings and bookmarks can be shared for others to comment	support for social feedback, in which a group rates the contributions of others, producing a digital reputation for participants
space where students can collaboratively contribute to the generation of content	support for conversational interaction between individuals or groups, from real-time instant messaging to asynchronous collaborative teamwork

For each of the three characteristics listed in Table 1, the possible interactions by students and educators are summarised in Table 2. The benefits to learning and student experience and the possible concerns or challenges faced by the individual students from our analysis are listed.

In Table 2, we have considered a fourth characteristic of a social software tool, that is, the content is accessible to the public, for example, a public-facing blog, or a set of photographs on Flickr that any one can see, or a set of bookmarks that anybody can access. In our study, students expressed concerns about privacy and having 'not-fully' prepared ideas out there, although some of them benefited from the feedback they had received on their artefacts (particularly, on the blogs, and on photographs).

Table 2 will be a useful guiding framework for educators and policy makers who are planning a social software initiative: how the characteristics and possible benefits of social software can be leveraged for student's learning experience; and for developing strategies to overcome the concerns of students.

As our analysis and Table 2 show that students learn by looking at the contributions of other students in the collaborative working space such as wiki or a group blog, and through conversations and dialogue, the students are better able to internalise their learning. However, as we have seen that there are concerns about everybody not contributing equally and, therefore, there are questions or concerns about the ownership of the resulting product. The value from social software tools comes only if there is participation by the group. On the other hand, some students even have concerns about sharing their reflections and ideas even with peers (e.g. being worried that somebody else would take their ideas). Even when the ethos of the social software tools is to be collaborative, the individual assessment is still seen as competitive by some students. Mechanisms such as the history in a wiki can track individual contributions but it requires monitoring by the educator. A more general solution is to design the assessment in a way that rewards group and individual contributions. Most organisations require their employees to work in groups and there will always be people who do not make as great a contribution to the group as others, so learning how to recognise and manage this situation is arguably a useful life lesson.

There are technological challenges for both the educators and students. In an institutional VLE, as new tools evolve, educators receive training as a part of staff training and development. However, if educators use social software tools on their own initiative, they may have to learn and experiment with the tools on their own (as was true in almost all the case studies in our study). Further, students might be using different tools on different courses, and this would require them to learn to use these tools, taking up time and effort, and perhaps diverting them from the actual learning activities. Also, if the students are not able to understand the role the technology in their learning or if there is a steep learning curve for the technology or the usability of the tool is poor, they will have an unsatisfying experience and may feel that the technology is 'getting in their way'.

For a social software initiative, it is important that educators align the usage of the tool(s) to the learning outcomes of a course or programme. Next, it is important to explain to the students the rationale of the tool and how the tool will support their learning and skills development. Our study has shown that it may be wrong to assume that all the students would be familiar with social software tools. For example in one of the case studies, educators mentioned that students were not given any training, because the tool was similar to sites such as Facebook. However, there were students who had no experience of social networking tools and were not confident about interacting with the social networking site. In this paper, we have not discussed the challenges faced by educators as it was not our focus. However, the subset of our analysis, as presented in this paper, clearly indicates that there are effects on educator's workload: it can be challenging to choose tool(s) to match with the learning outcomes of the course or programme and then to design learning activities that fully exploit the affordances of the chosen tool(s). Furthermore, the role of an educator becomes facilitative, (i.e. more like a mentor) when social software tools are employed. This

perception might be in conflict with that of the educator's who may still see his (or her) role

as 'delivering' education and instruction.

Table 2. Characteristics of social software tools, interactions with students and educators, and the possible benefits and concerns

Characteristics of a social software tool: Visibility of the contributed content for other students and educator			
Student interactions in response to individual student's contributions	**Interventions by educators**	**Benefits for the participating students**	**Concerns of an individual student**
• Response to queries • Comments on the contributions • Peer-to-peer support	• Early and timely intervention to prevent drop-outs • Adapting teaching strategies to suit student's needs • Early and timely intervention to clarify any mis-understanding of course concepts • Almost instantaneous support	*Support for conversational interaction*: • Collaborative learning • Team working • Engaging, fun • Reflective learning • Exposure to different approaches to learning • Problem-solving • Inspirational learning • Overcoming isolation • Skills development (communication)	• Lack of comments or student engagement • Negative comments or non-constructive feedback from students • Lack of trust in the feedback received from fellow-students • Lack of socialisation (not knowing one another well enough to be able to critically comment) • Hesitation to share individual contributions
Characteristics of a social software tool: Ability to share artefacts such as photographs, bookmarks			
• Triggers for conversations • Peer-reviewing and feedback	• Insights into students' understanding of the course and course's requirements	*Support for social feedback* • Socialisation (getting to know one another) • Sense of achievement (especially for the student who uploads the artefacts) • Conscious of the quality	• Selective commenting by fellow students • Concern about giving away their artefacts (e.g. bookmarks and photos) • An e-portfolio for future employment
Characteristics of a social software tool: Collaborative authoring space as in the case of wikis, group blogs, discussion forum			
• Peer-reviewing • Collaborative creation of content • Resource collation and organisation	• One common space to review • Reminders to students for participation and inform about upcoming deadlines	*Support for social networks* • A common space for communication and collaboration • Having the materials at 'one' place • Community-building • Sense of ownership • To overcome any communication barriers of face-to-face environments or due to geographical distances • Skills development (team working)	• Lack of student engagement • Unequal participation in group activities • Ownership of the artefacts developed collaboratively • Collaboration is perceived as onerous and sometimes difficult in part-time education • Resource management • Preference for individualistic learning
Characteristics of a social software tool: If the contributions are in a public web space			
• Scope for receiving feedback from people other than fellow students and educator	• …	• Feedback from external people • Conscious of the quality	• Concerns about privacy and students prefer anonymous contributions • Concerns about others looking at materials that they feel may not be 'ready' • Blurred and often conflicting boundary between academic and personal (social) contexts if the tool is a social networking site such as Facebook, MySpace

6   Limitations of our methodology and the way forward

The limitations relate to the methodology, the extent of investigations that we carried out, and the data, which we have collected.

*Case study methodology***:** A common concern about case studies is that they provide little basis for scientific generalisation (Yin, 2009). In our project also, we have not been able to enumerate frequencies and draw out statistical generalisations, although we have made an attempt to draw out analytical generalisations as in Sections 4 and 5 of this paper.

One of the features of case study methodology is that there should be multiple sources of evidence, with data derived by different techniques and related to a variety of stakeholders (Robson, 2002). In our project, the data collection has been primarily through interviews and visits to the participating institutions though we have made every effort to talk to both educators and students. In some of the case studies, we had access to papers presented in conferences or workshops, internal reports, and brief access to students' materials. Therefore, not every case study is based on multiple sources of evidence.

In some of the smaller initiatives, we were only able to meet one or two educators and a group of students. We were not able to speak to the policy makers or stakeholders at decision-making levels, who would otherwise have a strong influence for the sustainability of smaller initiatives and for adopting them at the institutional level.

Case studies are 'snapshots': The investigations have been conducted on the 'current' situation and the data that we have elicited is not through longitudinal studies, ie making observations over a long period of time. As a result, even though we have drawn out generalisations, the case studies should be considered 'snapshots' which are reporting the situation when the data was collected.

Bias of the investigators: In this project, one consultant investigated a case study rather than two or three consultants working together. Although each participating institution validated its case study twice, there is a possibility that an investigator's biases such as attitude towards social software and personal experiences or background may have influenced data collection.

To address the limitations of the methodology outlined earlier in this section, it would be useful to carry out investigations using multiple techniques for data collection and analysis during the development of a case study. Also, it would be useful to carry out longitudinal studies over a period of time involving two or more consultants with the aim of: avoiding individual consultant's biases; capturing the changes in experiences and perceptions of the initiative over time; observing how the initiative evolved, and if the initiative was able to sustain itself.

A significant requirement for any future research is the need to obtain quantitative evidence relating to the effectiveness of the use of social software. Such evidence would be of considerable assistance to institutional policy makers and to individual educators considering the introduction of social software.

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