

Social software as support in hybrid learning environments: the value of the blog as a tool for reflective learning and peer support

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Abstract

This article reports on an investigation of the potential of blog technology for encouraging interaction between students, and its consequences in terms of peer learning and peer support, on a module that forms part of an accredited library and information science (LIS) degree program. The findings consider the treatment of blogs in the domain of LIS, with particular reference to educational settings. Content analysis revealed that blogs offer comparable and additional benefits to predecessors designed to encourage reflective engagement with teaching material, such as learning journals. Most notable is the level of shared peer support evident in the online discussions between class members. The findings of this study are of particular interest to LIS educators who seek to develop their consideration of blogs in the classroom beyond simply identifying them as an option for online information provision, to deploying them as learning tools in their own right.

1. Introduction

Blogs (or weblogs) have experienced a rapid rate of uptake among Internet users in recent years. According to *Technorati* (n.d.) there are some 55 million of these frequently updated web sites which, typically, display in reverse chronological order the work of the main author(s), with facilities for the comments of others to be integrated into the main entries and for links to be made out to other Internet resources, with the most recent entries supported by an archive of earlier posts. Early research related to blogs claimed that they were popular simply because they were novel (Stiler & Philleo, 2003). However, novelty alone cannot explain why millions of personal and special interest blogs are set up, maintained and integrated into the Internet mainstream. Nor does it adequately account for the speed at which blogging has been adopted by users for “serious” applications in domains as disparate as journalism (Perrone, 2002), business (Kharif, 2004), medicine (Herper, 2003) and education (Smith, 2007).

The growth in the popularity of blogs as educational tools may be accounted for by a compelling set of arguments offered to persuade teachers of the benefits that can be experienced by student bloggers. It has been claimed, for example, that students who take up

blogging witness improvements in a range of skills, such as writing and debating (e.g. Downes, 2004). Added to this, because a blog environment facilitates common access to class members' work, it has been proposed that classroom blog activity prompts the creation of self-supporting online student communities (e.g. Walker, 2005). In the context of mass higher education, where year on year fewer resources are allocated to support greater numbers, teaching staff may be attracted to the potential of a tool that can offer such advantages, especially if it is one that is readily available and easy to implement. However, enthusiastic claims for blogging in educational settings are founded on a research base that is currently limited: little empirical work lies behind them. This realization presents instructors with a number of problems when they are designing courses. Amongst these is how they can be sure that the effort devoted to encouraging students to blog in class will repay on the investment made. Such problems may be magnified in institutions where, on the basis of anecdotal success stories, managers are persuaded of the economic (perhaps rather than the educational) value of introducing blogs into the classroom.

2. Research questions and problem statement

The focus of the investigation described in this article is the potential of blog technology for encouraging interaction between students, and its consequences in terms of peer learning and peer support, on a module that forms part of an accredited library and information science (LIS) degree program in the UK. In this case, the requirement for students to compose weekly blog entries replaced the previous practice of composing private entries in a closed, word-processed journal. The primary motivation to undertake the research project described in this article was the desire to make sense of the extent to which blogs promote reflective learning. If it were discovered that blogs did indeed fulfil this function, a further area of interest would be to establish the best means of exploiting features of blogging to encourage deep reflection into future presentations of the undergraduate module under discussion. It should be emphasized here that although it was suspected that the adoption of blogging as a development of the use of learning journals would increase the opportunities for students to reflect on their learning, it was not a given. Thus, the study sought to address the following research questions:

1. To what extent can blog technology serve as a means of encouraging interaction between students in a module cohort?
2. What are the consequences of this interaction in terms of peer learning and peer support?
3. Do students using blogs experience benefits comparable to those identified with traditional learning journals?

It was anticipated that the findings would develop the small body of existing knowledge on educational blogging. In turn, this would provide an evidence base for those considering the deployment of this technology to stimulate interactions between class members for purposes related to peer learning, peer support and reflective learning practice. The findings of the study are of particular interest to LIS educators who seek to develop their consideration of blogs in the classroom beyond simply identifying them as an option for online information services provision (as has been dominant practice to date, for example where blogs have served as a platform for delivery of current awareness services) to deploying them as learning tools in their own right.

3. Blogs and library and information science

Despite their recent general wide-spread adoption, there are co-existing levels of frustration and enthusiasm associated with blogs amongst members of the LIS community. It is perhaps the sheer variety of blogs – in terms of subject matter, quality of content and impetus for creation - that accounts for this. Attitudes towards blogging range from plaudits for a serious application of social software to dismissal of frivolous endeavour: “Web logs are either one of the most important Internet phenomena of recent years, or possibly the silliest” (Clyde, 2002). The debate that ensued following the publication of the 2005 American Library Association President Elect’s paper “Revenge of the blog people” (Gorman, 2005) provided a good illustration of the wide range of views of blogs and blogging amongst LIS professionals. In spite of the dismissive attitudes of some, however, it is possible to cite numerous examples of how librarians and information scientists are exploiting blog technology. For example, the publicly accessible *Library Weblogs* site (*Library weblogs*, n.d.) demonstrates the ease of

taking advantage of the format to provide news and current awareness services to the LIS community. This may be on general issues (for example, *LISNews*, 2006), or on specific areas of interest (for example, *Handheld Librarian*, 2007). Here LIS professionals are both the providers and the consumers of the information that is disseminated. The consumption of blog content created *by others* can also be important to librarians and information scientists in the workplace. For example, previous research on blogs in the business environment shows that entries can serve as a source of competitive intelligence and, as such, have a strong role to play in activities such as environmental scanning and the monitoring of products and services (Habermann, 2005). In other library contexts blogs are regarded as a further means of engaging users with information content. In these circumstances, the format is deployed primarily to push out news, although not necessarily with the expectation that those targeted will make contributions in return (for example, see the case of Gateshead Public Libraries service (Gateshead libraries, 2007)).

One of the domains of LIS work in which blogs have generated the most interest has been in knowledge management (KM). Here blogs act as locales for online dialog, where new knowledge is created through “good” conversation. This function has been recognised in the corporate environment with a growth in organizational blogging, as reported in the LIS trade press (for example, *Social media revolution?* 2006, p. 13). Equally the literature of school librarianship points to practice where librarians have been able to take advantage of the blog format beyond straightforward information services provision and consumption. Oatman (2005), for example, reports how blogs are deployed in schools for pupil-to-pupil communication and the display of work. Another high school case study argues that blogs can serve to promote literacy through story-telling, to encourage communication, to motivate interest in writing, and to collect feedback from class members. This is because, it is claimed, they furnish a space for work and reflection (Clyde, 2005). These two forms of blog application, supported by librarians and information scientists in the business and educational environment, align with four of the five (*see footnote 1*) main motivations to blog, as identified in the research literature: (1) to provide commentary and opinions; (2) to express deeply felt emotions; (3) to articulate ideas through writing and (4) to form and maintain community forums (Nardi, Schiano, Gumbrecht, & Swartz, 2004).

Two of the popular practical uses of blogs made by LIS practitioners as noted above, i.e. the provision of information (notably news and current awareness services), and the support collaborative working in the spirit of KM principles, are reflected in instances of LIS educators' introduction of blog software into the classroom. For example, in the School of Library and Information Science at the University of Iowa in 2001, students registered for a course on electronic publishing explored blogs for the delivery of tailored information services (*Ep: the weblog*, 2001). A similar approach to the dissemination of information was adopted in 2002 by students following a course on computers and libraries at the University of Iceland. Here they maintained a blog that carried news about web sites related to the use of IT in libraries (*ComLib*, 2002). At the University of Arizona LIS students have been exposed to blogs as a site for collaborative working. As part of the summer 2004 course "Decision making for information professionals" students were encouraged to blog "to share...thoughts, observations, and ideas regarding decision making in the digital environment" (*Decision making for information professionals*, 2004). A further example at Athens University of Economics and Business (AUEB) shows how the blog's strengths as a tool for disseminating information and an environment for collaborative working were combined. Students undertaking the KM program were required to display the output of their research into KM tools and techniques as entries on a class blog (*AUEB knowledge management 2004*, 2005). They were also required to comment on the links between tools and techniques that they had identified as a result of engaging with the contributions of the other students. The examples cited here thus show how LIS educators have succeeded in tying the blog as an instructional tool to ways in which students may use it in their future occupational roles as librarians and information scientists. These efforts are commendable in that they give the students the chance to develop and practice professional skills in the dissemination of information and collaborative working. However, they are limited in that they do not appear to take full advantage of the blog format as a platform for learning. It might be concluded that an important aspect of blogging is underplayed in the LIS education setting, viz the blog's role as a stimulant for reflective learning, and this is one of the main issues that the research presented here sought to address.

4. Blogs, learning journals and reflective learning

A theoretical underpinning for learning as an iterative activity can be found in Kolb's experiential learning cycle (Kolb, 1982). Students are assumed to approach a subject with a set of naïve concepts that need to be challenged by the learning context. Through reflection on this experience, students are expected to explore for themselves the realities of the subject area, and this leads to a growth in their knowledge. The challenge for tutors is how to encourage students to engage in deep productive reflection during their studies in order to bring about the desired elaboration of their subject competence. This paper considers the question of whether students engaged in the authoring of comments on the blog entries of others experience an enhanced process of knowledge construction through collective encouragement of reflective learning. It might be expected that as they compose their own blog entries, students have the opportunity to reflect on their individual experience and understanding and this, in turn, encourages them to modify their own beliefs and behavior in relation to the subject studied.

If this is the case, the blog can be regarded as the successor to the learning journal or learning log (as described, for example, by Park (2003)), because it serves as a vehicle for individual reflection. Traditional learning journals provide learners with a mechanism for documenting their own understanding and behavior as it develops. This activity captures qualitative information about the developmental process that might otherwise be lost, and which the learner can use to compare past and current behavior. A more immediate benefit of learning journals is identified by Holly (1994), who discusses the interpretative aspect of composing a journal entry. Journals can operate at different levels of formality. A common structure is for the learner to set personal targets, or to negotiate targets with the tutor, and then to document progress towards those targets over time (Barclay, 1996). The private nature of such journals is seen as an advantage (Thorpe, 2004). The theory is that learners feel less inhibited about disclosing their true feelings and anxieties regarding their level of understanding because they are not under scrutiny. It is also suggested that assessment be avoided to further liberate the learner to take advantage of the private space afforded by the journal (King, 2002, p. 25). In certain subject areas with a clear vocational focus, or where learners are expected to produce a large written output, this may be appropriate. In this

essentially unregulated context, however, the responsibility for deriving educational value from the learning journal lies firmly with the learner. It is difficult to see how learners in other contexts would be sufficiently motivated to persevere with the maintenance of their journals without the added incentive of assessment. A further drawback of private journals is the sense of isolation reported by individuals when asked to evaluate their experience of keeping a journal as part of their studies (Barclay, 1996, p. 34). Moreover, a private journal may chart the development of individual perspective on subject matter, but this precludes external challenges to that developing perspective. Participants in earlier studies where collaborative or public journals have been used exhibit positive, or at least ambivalent, attitudes to this more open variation (Alterio, 2004; Nückles, 2004). This would suggest that privacy concerns expressed earlier result from excessive caution on the part of the tutors. On balance, there is much to be gained from a degree of interaction surrounding reflective journal entries if this can be engineered. Giving learners access to each others' work exposes them to a range of different perspectives on the same subject matter, thus providing additional opportunities to challenge their own understanding. Allowing learners opportunities to give one another comments and feedback further enhances the possibilities around a subject area, and opens the further possibility of peer learning and peer support. It should be acknowledged, however, that this can be at the cost of sacrificing of individual freedom to take a stand, disagree with another person's perspective, or explore a controversial topic, while secure in the knowledge that what is written will only be seen by the instructor or, in some cases, remain completely confidential. Similarly, compulsion to participate in a public forum may not suit introverts, or those for whom the issues to be discussed are novel (Hew & Cheung, n.d.). The effect that this may have on the quality and depth of students' discussions in an online environment is recognized.

Here the blog has the advantage of being able to uphold the journal's notion of writing as an intrinsically reflective activity, and students can adapt the practices common to learning journals, such as setting targets for content, to the blog environment. In addition, it would appear that a journal in the form of a blog overcomes some of the constraints of its off-line equivalent. For example, the public nature of the format, and the possibility that others may comment on an individual's work, may address issues of isolation, and encourage peer

learning and support. This public aspect of blogs also exposes the author's own thoughts to be challenged by others as part of the constructivist learning context. The evolution of blogs would thus seem to provide an environment with an appropriate balance of characteristics to facilitate peer support and interaction. (It should be noted that in this context the term "interact" is understood in the sense of individuals making actions that are in close relation with one another. Thus "interactions" across a set of blogs may range from extensive dialogs between two or more people - as may be observed in tools such as bulletin boards that offer threaded discussions - to simple reactive comment prompted by the content of an existing blog entry offered by one person to another.)

Yet to be debated at length in the LIS literature, some researchers from other domains have already considered the role of blogs in reflective learning processes. Nardi et al (2004), for example, discuss blogs with reference to "thinking by writing" activity, where the goal is "to take advantage of the general nature of weblogs as "public journals" in using them for personal reflection, in the context of a learning community, on issues that arise in the course, both rhetorical and course-related" (Nardi et al., 2004, p. 45). This can be achieved when students carry out some research, post results to their blogs and then comment on one another's output. Also of relevance to the question of reflective learning is the sense of community that can be felt amongst a set of blogging students. It is claimed that in a blogging setting the sense of community is stronger than that experienced by students in the conventional classroom (Dickey, 2004; Nardi et al., 2004, p. 46). Unlike discussion fora and other online communication tools, blogs provide a peculiar mixture of the personal and the public, and it is perhaps this that underpins their value for encouraging reflection. The specific ownership of a blog confers an authority to one particular voice, and therefore legitimises any and all contributions from that individual. Readers of the blog may progress a discussion by leaving comments or links, but the authority to lead, continue or alter the course of the discussion lies with the owner. This asymmetry is understood by all users of the blog, and is an integral part of the blog's structure. This clear ownership principle takes advantage of the democratic nature of online communications while preserving the freedom of expression that is valued in a personal diary or journal. Drawing on the shared cultural understanding of the diary format, the intuitive chronological development of the blog is another direct parallel with

the creation of journal entries. Taking into account these arguments about structure and legitimacy of the main author, it is not surprising that Oravec (2003) noted that blogs may be regarded as a suitable online representation of the learning journal.

It follows that a deeper understanding of learners' attitudes to blogs and blogging is needed to ensure the preservation of the characteristics of the learning journal that lead to genuine reflection, while at the same time providing a supportive environment that encourages dialog and peer support in the informal sense. However, to date there has been no extensive research into blogging in an LIS educational setting. This is not to say that there is a lack of published literature on blogs. Indeed, much has been written about them. For instance, there are publications that discuss how to evaluate them, how they are consumed, and how they might be used to engage end-users. There are also examples of how blogs are used in both general educational settings (for example, Downes, 2004), and with reference to specific courses (for example: Brooks, Nichols & Priebe, 2004; Walker, 2005; Williams & Jacobs, 2004). However, genuine empirical research on blogs is limited (Herring, Scheidt, Bonus & Wright, 2004, p. 3; Williams & Jacobs, 2004). In addition, much of this output is authored by enthusiasts from beyond the domain of LIS (Clyde, 2004, p. 207) who, despite the proliferation of journal blogs, more readily tend to examine the other types (Herring et al., 2004, p. 6). Thus, "findings" on the characteristics of blogs are biased against the most common blog examples. In addition, papers found in the extant literature related to blogging in educational settings are often deficient as sources of information for those who would like to take advantage of the technology to improve student learning. In fact, published research that discusses the means of maximising the value of the blog format across the full range of applications is lacking:

There is a clear need to interrogate the range of blogging styles used by different disciplines and cultural groups and to develop a lexicon to articulate the most effective blogging mechanisms for different contexts. (Bruns & Jacobs, 2006, p. 3.)

Downes' work (2004) typifies a common problem evident in writing on blogs in education. This is an enthusiastic article on the educational functions of blogs – as diaries for students, as a means of disseminating information about the class, as locales for class discussions –

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with reference to institutions such as the State University of New York and Cornell College. Unfortunately the presentation of the work hints that its “findings” are based on anecdotal evidence such as stories of practice, rather than data derived from well-executed research. In work such as this, readers are encouraged to observe how blogs (and other technologies) “can” achieve particular learning objectives, but are unconvinced as to whether they actually do so in practice. Another drawback of the work on educational blogging is that it often fails to provide adequate explanation of what is discovered in the studies reported. For example, Dickey (2004) presents some evidence for reduced feelings of isolation and alienation in an online learning context that made use of blogs, but does not draw concrete conclusions about why this might be the case. Likewise, Brooks et al. (2004) assumed that the requirement to blog in class would lead to an improvement in students’ writing skills. However, they were unable to uncover sufficient evidence to support this contention (Brooks et al., 2004, para 6). Thus, tutors and designers of online learning environments are currently faced with the challenge of understanding mechanisms at work in the blog environment without a research base on which to draw when making decisions on course design.

5. Research design

5.1 The student cohort

The study was based on the deployment of course-assessed blogs in a closed environment as part of a third year UK undergraduate module entitled “Information Delivery”. Class material for the module was presented in part face-to-face with three hours of class contact time per week, and in part online through a dedicated module portal. The students were thus studying in a hybrid learning environment that maintained some of the features of a traditional taught class, such as weekly lectures, in combination with access to a set of online learning tools presented via the portal. In its previous form the module had required students to keep a learning journal in which they discussed the module themes of information behavior and associated technological support mechanisms, and were expected to reflect on their learning. Moving this activity into the blog space was considered a natural step in the module’s development, not least because it extended the opportunity for students to review and reflect

on the work of one another. Much of the module content related to the phenomenon of information overload and to targeted information provision as a means of combating end-user problems in handling information. It was thus appropriate that students were exposed to blogs (along with other examples of communications technologies) and that their functions were related to information delivery. This was particularly important for the students who were taking the module as part of the degree offered by the School that is accredited by the Chartered Institute of Library and Information Professionals (CILIP), and who expected to follow careers in LIS. It can be argued that graduates of such programs who have used blogs in practice (as opposed to simply heard about them, or looked at examples, in class) should be better prepared to implement such tools successfully in the work-place. For all students the exercise was deemed worthwhile given that many of them would enter employment in large, distributed, multinational firms that depend on electronic communication to link employees.

Further benefits of encouraging discussion of the module content in the blog environment were related to the profile of the student cohort registered for the module. A large proportion of those who took the class were international students whose first language was not English. Typically, in a traditional classroom, these students are reluctant to speak out. In contrast, in online environments they feel more empowered to do so (Kirkpatrick, 2005). When blogging, for example, there is more time to compose a contribution to the discussion, poor English may be more readily tolerated, and difficulties associated with strong accents or poor pronunciation are irrelevant. Added to this, students who come from cultures where student-centred learning is not the norm are encouraged to join in the spirit of the “inclusive curriculum” and take ownership of their learning experience in a way that is more explicit than in a class which relies on traditional face-to-face discussions. It should also be noted that the majority of the students on the module were sophisticated computer users and, as such, were expected to accept the requirement to record their reactions to the module using novel software. Although it was not necessary to present the exercise to the students in this way, it could be argued that the requirement for the students to subject their work to the scrutiny of their classmates was a form of group work or class participation. Equally, composing blog entries was the equivalent of speaking out in class, reading the blog entries of others mapped

on to listening, and making comments on others' entries took the place of class discussion. In the event, the majority of the students had not created a blog before, and none had ever been asked to produce a blog for a course work assessment.

To set the context for the main discussion in this paper, it is worth noting the students' reactions to the requirement of the module to keep a blog, and comment on the blog entries made by their classmates. Many recorded their perceptions of the task set in their postings. Through an examination of these data, it is possible to see how the students reflected on the blog exercise per se as they worked their way through the module materials.

It is evident that at the start there was a degree of initial puzzlement as to the role and purpose of (in one student's words) "the mysterious blog". Early postings show how the novelty of the task made it difficult:

It's kinda hard to know what is expected from the blog entries if you haven't done it before.

As a result, some students exhibited a lack of confidence in the value of their weekly entries:

I ... don't know what to write for our blog entries. I don't really understand what it is for, so I write what I have done and what I think about it.

What are we actually supposed to be doing in these blogs? As I understand it they are meant to be our thoughts and feelings about what's happened in the week past but... this is completely new and a little intimidating as well... what I do worry about is finding 300 words that are valid and worth something to my degree.

I am intrigued by the blogs... they are a good idea... to reflect on the week... but I am also concerned as to when to write them... I am worried that if I leave it till the end of the week I am likely [to forget what to write].

In contrast others quickly appreciated the rationale behind the exercise. They revealed in early entries their expectations with reference to the goal of encouraging reflective learning:

I think this whole blog thing is probably a way of getting us to reflect on what we have learned at its simplest level, and extra reflection may be of more benefit than just writing stuff down. I think it's quite a good idea that we are able to read other people's

blogs to get more varied opinions of the module... it could probably help clarify things said in the lectures, or provide different ways of thinking about any one subject.

Some of these entries pointed to specific long-term advantages of keeping the blog, such as a means of preparing for the exam at the end of the academic year, and for developing skills for future study and work environments:

Well, here we go. My first ever blog, woohoo! Anyway, I thought being told to reflect on what I have learnt after every lecture was some interesting advice... I probably have never really reflected on what I have been learning, and [have] seen lectures as a place to get extra information... I think [that] having to reflect on what I have learned will probably help me understand more clearly and take it all in more easily. I also think that when I come to revise [for the exam] the information won't feel as "new".

Understanding that I gain by reflecting in the blogs will most likely help me pass the exam and then apply these ideas to other modules, and maybe even in my career.

The blogs... are a tool of this module [as if] we were in a company. We have to show that we can evolve as students, team members and maybe as employees.

Later entries show that how these general expectations were met. The entry below is typical of postings of this type from towards the end of the semester:

I feel that these blog entries have been very useful to me during the course of this module. It has made me reflect upon the week's events, and also [on] how the lecture material links up with all of the group tasks that we have been asked to perform.

As well as expressing general expectations of the task set, the students identified a number of additional specific reasons why keeping a blog might be useful in their studies. These included motivating them to engage with the module in general ("Blogs... another word for commitment"); to try out a new way of learning; to pace their work out over the course of the semester; to force them to complete the weekly reading exercises; and to practice their writing skills. There was also enthusiasm for learning from one another by consulting the growing online resource. Again, there is evidence in the archive of postings that these expectations were met, as is demonstrated in the two comments below:

[Other students'] blogs about the topic help me understand the concepts. Your blog is a prime example of this. Thanks.

I am also still trying to get to grips with this module, and have not attempted to use [the library portal]. After reading this blog I think that I will get some extra help from someone with experience of [the library portal] to avoid any problems that may arise.

Some resourceful individuals found other practical uses for the archive of postings, as well as speculated on its long-term value beyond the semester in which they were registered for the module. For example one student read the blogs of colleagues in the other labs in order to anticipate the work in the week ahead:

If you navigate around you can find information about the next tutorial... Some groups have tutorials earlier than our group, and they may give us a small advantage.

Equally, another student highlighted how the tutors could trawl the blog output as a resource for student feedback:

As the students put down their thoughts and feelings in the blogs, Brian and Hazel can use them to get useful material on how the module material can be modified... before it is taught to the next set of students.

It should be noted, however, that not everyone was an enthusiastic blogger, despite the encouragement and enthusiasm of the tutors. For example, one student complained:

My blog content makes me sound like a grumpy old man and, who knows, I might be just that. I don't enjoy reading! I don't enjoy writing! I find evaluating theoretical material a duty. Brian and Hazel are so enthusiastic, and I think that some of that rubs off and makes me more enthusiastic. Unfortunately I go home again and realise that I have to read another article and write another blog and read several other blogs and think of something to say about them.

Specific concerns related to finding the time and motivation to complete the weekly task. The requirement to comment on the work of the others was viewed as a particularly difficult and tedious chore. However, the cohort as a whole was open-minded about the exercise and

anticipated that the true value of what they were expected to achieve would become evident in the course of the module delivery:

It is still early days to tell how effective this exercise will be, but it's also proving to be an interesting experience.

Writing my blog... is quite a burden... every week. Anyway, I guess we are going to have similar stresses in full time jobs, so it may be a good thing to get into the practice of doing weekly written tasks.

The rate at which students who had initial doubts bought into the system varied across the group. Two to three weeks into the module a number postings appeared expressing opinions in line with the content of the examples quoted below:

My first impressions on having to write a blog every week were pretty negative! After thinking about it for a few days I have come to the conclusion that it's probably not such a bad thing! I think that writing a blog every week will help students to focus on the module and also lead to discussions and observations from the lectures/practicals.

At first I thought the blog entry was pretty pointless and I had nothing to gain from this experience, and how wrong have I been. This is the first time since the start of the Information Delivery module [week 3] that I have found the idea of writing a blog useful. I'm now starting to realise the importance of reflecting on what I have learned and what happened in the previous week.

I also questioned the validity of keeping a blog, but after doing one and reading a journal article... I began to think it was going to be of use to help me understand.

Equally, towards the end of their time on the module when the students looked back on what they had achieved, attitudes towards the requirement to blog had changed:

The task of doing the blogs often felt like a chore to do every week, but in many ways they were a great help to me.

At the beginning doing the blog entry... was boring... Doing the blog entries [now] isn't a task any more.

It's quite amazing (and scary lol) to read this blog again, and I'd like to advise future students that it is really helpful to keep a blog when it is well done.

Of course, one broad criticism of the whole exercise is the inauthenticity of the set-up. This did not go unnoticed amongst the students. Key to discussions was the issue of the obligation to blog in exchange for marks. One student remarked that this was not how blogs develop in the real world:

Since there is an element of grading there is pressure to update the blog with something relevant in a certain timeframe – not usually something that you would expect with a blog.

Others suggested that classmates were simply writing what they thought would please the lecturers, rather than their true feelings, and doubted whether anything would be written at all if the work were not graded. In short:

[This] is a module, and the blog is part of the coursework. We have to do a blog entry each week... we do it for a grade.

The opportunity to gain marks for blog entries was an incentive to participate:

I think that it is good that we are given marks because it makes us have a go at attempting to write blogs every week. If we were asked to write blogs every week, but were given no marks, then I doubt very many people would actually do it!

It is difficult to judge the extent to which the students were simply "playing the game" to ensure that they passed the module. Certainly, of the main motivations to participate in online environments "usefulness of acting" (Hall, 2001, p. 140), in this case securing marks, may be regarded as the most powerful. However, it should be noted that much of what students are asked to do in an educational setting is inauthentic (for example, they are commissioned to concoct consultant reports based around contrived case studies, they are charged with analyzing abstract concepts in essay format etc.). It can thus be argued that this exercise was authentic in the context of students' position. Furthermore, for this module many of the students relished the freedom of the blog format, produced much more material than the minimum specified, and celebrated the openness of entries:

The... blog in Information Delivery was liberated from strict rules... and that gave us the [opportunity] to comment and express our personal opinion or even thoughts, [on] many things about the module.

I've often read your blogs because I like your honesty. I really enjoyed your first paragraph, especially for the proposition [that each week's blog entry is] "An online essay of 1000 words a week for torture"... I like it when there is a touch of fun in the entries.

Although it was possible to pass the module by doing the absolute minimum, it was heartening to see that the majority of the students took the task seriously, often produced work over and above the minimum requirement, even admitted that they were enjoying the experience, and - in some cases - neatly tied it to the main themes of the module:

Rather perversely I have enjoyed this module and the blog writing in general.

I am really enjoying blogging. It is a great outlet to vent your thoughts, and in the context of this module it is a perfect example of knowledge creation.

5.2 The blog dataset

A total of 79 personal blogs were produced by the students on the module over the 15 weeks of its duration in 2005. Students were required to make a weekly entry to their own blog, and to contribute at least two comments per week on the blogs of any other students in the nine groups that were taking the class. Regular sets of "blog hints" were provided to the whole class in the form of three or four broad questions in order to break down the blog task and stimulate a reflective approach to individual consideration of the module material covered each week. Students were further encouraged to be reflective in their blog entries and comments in the assessment description, in lectures and in the blog marking criteria. The instructions drew attention to the requirement for entries to:

- be relevant to the week's lecture, reading and/or practical exercise;
- make links between theory and experience whenever possible;

- demonstrate understanding of the material covered or clearly articulate areas of difficulty;
- justify points made by referring to the source material on which any judgements were made, and/or through reasoned argument, and/or using illustrative examples from the practical exercises completed in the labs for the module or other personal experience.

The students were also requested to ensure that their work was well presented within the constraints of the medium. Other than this, students received no guidance or instruction regarding the type of postings that were expected. They were therefore free to interpret the exhortation to be “reflective” to mean that they should challenge each others’ statements as much as possible in an attempt to demonstrate critical analysis. A range of possible types of comment might therefore arise according to individual students’ interpretation of the task, and an analysis of the characteristics of these comments should provide an insight into the value of such interaction. Of particular interest in this case was the level of support that students may expect to derive from the environment, and the apparent degree of reflection.

Although the instructions did not forbid the students from doing so, very few used the blog environment to discuss issues other than those related to the syllabus of the module. There were few instances of the exchange of trivia. This is in contrast to the findings of other studies of student use of computer mediated communication technologies in educational environments (see footnote 2).

5.3 Coding and content analysis procedures

Content analysis, a technique common in the assessment of online interactions, and one which has been deployed in other studies of blogs (e.g. Herring, 2004; Swain, 2006), was adopted as the technique to extract the data from the blogs produced during the module. Since the main focus of this study was the *interactive* aspect of blogs, the analysis focused on blog comments, rather than the main entries. Included in the analysis were all first-level comments (i.e. comments on main blog postings, rather than further comments on comments). In total this amounted to 905 comments which related to 625 original blog postings.

The coding scheme developed by Kember, Jones, Loke, McKay, Sinclair, Tse, Webb, Wong, Wong, & Yeung (1999) provides a good basis for judging the reflective content of blogs. For this study a simplified version was deployed to categorise the data collected from the comments. It identified comments as “reflective”, “non-reflective” or “content-free”. The third category allowed for the possibility that a comment may not make explicit reference to any substantive points in the main blog entry. Such an entry might still have value, however, on an affective level.

The study also sought to assess two other factors of the blog entries: “propositional stance” and “affective tone”. “Propositional stance” draws on the idea of illocutionary force from the theory of speech acts (Austin, 1962). In the context of this study it refers to whether a student's comment on another's blog entry supported or challenged the original points made. The term as deployed here indicates the distinction between general agreement or disagreement between the commenter and the author of the original blog entry. The “affective tone” refers to the degree to which students making comments on others' entries offered support or exhibited destructive linguistic behavior, i.e. behavior that would tend to destroy the continuity and quality of the dialog, in response to the work on which they were commenting. Blog comments containing little or no substantive content, but which exhibited positive affective tone, would indicate a generally supportive environment where students could expect acceptance and encouragement for their postings. Likewise, comments that challenged the original blog entry in a positive way can be assumed to have facilitated further dialog and reflection by both participants. Negative challenges, on the other hand, could stifle reflection and introduce distractions into the conversation.

It was anticipated that an investigation of the degree of reflection, propositional stance and affective tone of blog comments would indicate the extent to which the blog environment is supportive for students, and how inclined students are to make reflective contributions in the online environment.

The coding scheme used in this study, as summarised in Table 1 below, was straightforward, and intended to generate findings that would provide a broad-brush understanding of the data. In essence, the analysis classified a blog comment according to three independent characteristics. Since the intention was to reveal any emergent relationships among these

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characteristics, the scheme can be considered systematically coherent for the purposes of this study. Any analysis that attempted to make stronger claims than those presented below would need to provide a greater justification for its coding scheme on the basis of systematic coherence.

Table 1 - the three dimensional coding scheme

Dimension	Code	Interpretation	Evidence
Reflection	C	Content-free	Comment makes no reference to points in the original entry.
	U	Non-reflective (U='unreflective')	Comment makes reference to the original blog entry, the module content or the general context in order to state an opinion, emotion or a point of fact or theory.
	R	Reflective	Comment addresses points from the main blog entry and demonstrates a consideration of the validity of the content, the process or the underlying premise.
Propositional stance	A	Agree	Comment actively supports the point made in the original entry.
	M	Mixed	Comment neither supports nor challenges original entry.
	D	Disagree	Comment takes up a contradictory position to the original entry.
Affective	P	Positive	Comment is encouraging, approving, accepting, etc.
	E	Even	Comment appears affectively neutral.
	N	Negative	Comment is hostile, discouraging, dismissive, etc.

As might be expected, there were cases in all three dimensions where the appropriate choice of code was not immediately obvious. In the reflective dimension, problems observed by Kember et al. (1999) in choosing between degrees of reflection were also evident here. The example below is part of a widespread debate about the option for individuals to upload photographs of themselves to the blog environment:

... a picture is not really needed in an organizational profile because you don't have to imagine the person who you are talking to in order to do a good job.

Whether this is true reflection, or simply introspection is debatable. Certainly the student is considering the usefulness of a profile picture from a novel point of view, and in general, such shifts were counted as reflection.

The affective dimension was generally quite straightforward, although short comments such as the following sometimes posed difficulties.

Good blog. I also agree that the roles presented to the group helped to create order in the group.

The question here is whether the introductory use of the phrase “Good blog” constitutes a positive affective tone. Although minimal in comparison to the supportive tone of other comments, the use of such phrases is still a signal that whatever comes next is meant in a positive way. Such comments were therefore treated as positive for coding purposes.

In the propositional stance dimension, there were several instances of students making two points in the same comment, one of which was to agree with the original entry, and the other to disagree or present some other point of view. Where there was internal conflict of this kind, the comment was generally considered as 'mixed'. On occasion, students would use the phrase 'I agree' in a comment purely as a supportive device as in the example below. Such cases were generally not treated as genuine agreement – i.e. about an issue relating to the module content - but rather as examples of positive affective tone:

As I'm in your group and sit next to you I agree with everything you say. Let's hope all our team turn up tomorrow.

Difficulties in examining and recording the data were minimised through the adoption of Kember et al's coding scheme - an established standard in the assessment of reflection - and adherence to basic rules of good practice in coding (Fielding, 2001, p. 234), for example in checking that codes were applied consistently across the data set. When, in practice, problems arose (as described in the examples given above) these were resolved by checking the context of the comments in question, as well as considering similar cases elsewhere in the data. This degree of care enhanced the confidence in the coding as a process that generated reliable output on which to base the research findings.

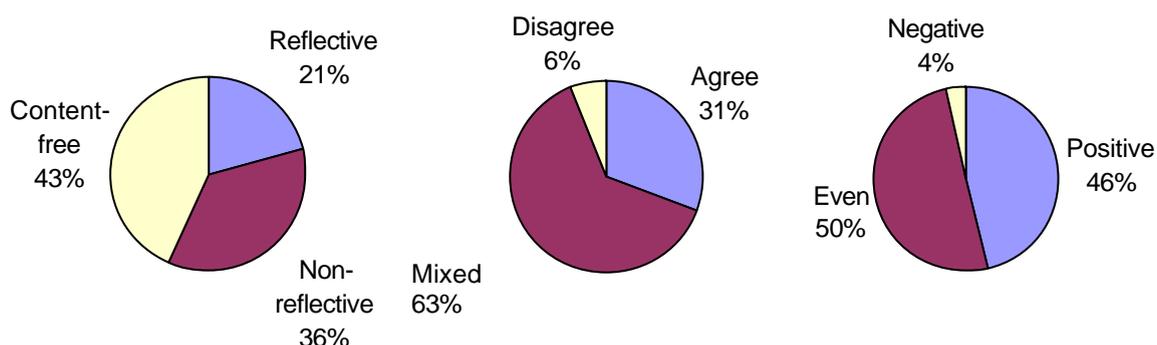
6. Findings

6. 1 Findings before combination

Some clear patterns emerge when the number of comments in each category along each of the three dimensions is summarised. Table 2 presents these figures. The proportion of comments falling into each category is also expressed as a percentage in Table 2.

Table 2 Frequency of occurrence of individual coded categories

Reflection			Propositional stance			Affective tone		
Reflective	189	21%	Agree	280	31%	Positive	417	46%
Non-reflective	325	36%	Mixed	569	63%	Even	455	50%
Content-free	391	43%	Disagree	56	6%	Negative	33	4%



The figures for the affective dimension clearly show a bias towards the positive. These figures result from students complimenting each other's work, and from a number of other observed behaviors. One of these is empathy, exemplified by the following comment:

I also became an editor [in the lab exercise] but I understand what you mean about workload because I was struggling enough before I became editor and got a new job. The good thing is my team understand. We are all busy, so we are just trying to help each other out as much as we can.

Some comments went much further in the explicitness of the encouragement offered, for example:

I enjoyed reading your blog [...] I think you are underselling yourself on your English. Your blog is better than [that of] most native English speakers I have read, and

although I have no reference myself as I never learned a language abroad, I think most people would recognize it's not your native language, and would be patient in understanding this. Good luck with the rest of it and there is no need to be shy.

Occasionally, a student chose to use a positive affective tone in order to make a criticism more acceptable. In the case below, the student uses jokes, deliberate misspellings and emoticons to rebuke a classmate for complaining about the lack of a handout in the lecture:

Maybe it's done for making you [experience] information overload? Seriously, if you are not able to take some notes [...] and that you are not able (or maybe you didn't think about that) to re-read that at home [...] in THIRD year, maybe there is a problem somewhere :) Oh, and what about the [...] lecture on MAKING notes? Maybe you were one of those who were laughing [...]? Come on girl, I ain't mad at cha... (I swear!) :)

This particular example also shows a student referring another to some earlier lecture material and pointing out its relevance to the current situation, as would be expected of a peer tutor.

Similarly, in the propositional stance dimension there was a clear bias towards agreement, even though more than half of all comments neither agreed nor disagreed with the original blog entry. This finding shows that the students were not deliberately looking for opportunities to debate with each other in order to demonstrate a reflective approach. The reason for the tendency to agree with the original author is not absolutely clear. One explanation may be that there is actually very little true reflection, and the figures are simply evidence of a kind of "groupthink" whereby students agree with each other without really considering the content issues:

I agree with what you are saying here. I have found that the commenting part has been far more difficult than actually writing my own blogs. This was not just down to the grammar though, but that other than do the usual "I agree...." or "I disagree...." what could we actually write in the comments? Even coming up with a meaningful "subject" for the comment has proved difficult. As if to prove my point, I have even

done that here! No doubt there will be lots more comments on this blog, and the majority will all start the same way....

In fact, one quarter of the comments (227 out of 905) began with the words "I agree" or some close variation such as "I totally agree".

Another interpretation could be that the issues were not being considered at a deep enough level within the original blog entries to allow any substantive disagreement. Alternatively, this tendency could simply be observer effect. Since the students were engaged in an activity for which they would receive marks it is reasonable to assume that individuals did not want to jeopardize their reward for participation. Thus, as a group, they may well have been inclined to create positive postings for the sake of the incentive of the final mark. Whether or not this would have been the case had the requirement to blog not been linked to the final grade for the module, or the project had been completed by an independent researcher (as opposed to the class tutors) is open to question. It is evident, however, that many of the students did not feel inhibited when expressing their views, and in several instances they congratulated one another on their honesty, as is shown in this early comment:

I really enjoy the fact that you are not scared to write... how you feel. I hope there will be more blogs like yours.

Further research would be required to discover whether these explanations for the positive tone of the blogs (when taken as a whole set) stand up to scrutiny. It is clear, however, that such a high level of agreement contributes to a supportive environment. A blog entry was very unlikely to receive any kind of substantive challenge, and in this environment – which may be regarded as an artifact of the cohort's creation - a student might therefore be expected to feel empowered to offer honest opinion or self-disclosure without fear of such comments being rejected.

Initially then, the figures for the reflective dimension might appear disappointing. There was a clear bias towards comments with little or no reflective content, and this might be taken to suggest that the blog medium is not as effective as a private learning journal in this respect. However, a full analysis of the reflective capacity of blogs would have to be based on the main entries themselves. These are the equivalent of the learning journal entries, and are

therefore where the greatest level of reflection would be expected. That around a fifth of all first-level comments exhibit some degree of content, process or premise reflection is therefore quite encouraging, and suggests that a larger study to investigate the reflective content of the main blog entries would provide some interesting insights. This would allow comments such as the one below to be put to the test:

Often I feel it is all too easy to become complacent when carrying out extra studies for a module after the week comes to an end. When creating the blogs I have been required to read over the lecture slides and the notes made during the lectures to help with the production of the blog content. This in a way has helped me to fully take in what has been discussed during the week.

6.2 Combined findings

The findings of the study can be further elaborated by looking at the distribution of comments across the 27 possible combinations of the basic codes, as summarised in Table 3.

Table 3 Distribution of categorised comments in descending order of frequency

Reflection	Propositional stance	Affective tone	No	%
Content-free	Mixed	Positive	202	22.3%
Non-reflective	Mixed	Even	112	12.4%
Content-free	Mixed	Even	88	9.7%
Non-reflective	Agree	Even	83	9.2%
Reflective	Mixed	Even	67	7.4%
Non-reflective	Agree	Positive	54	6.0%
Non-reflective	Mixed	Positive	49	5.4%
Content-free	Agree	Positive	46	5.1%
Content-free	Agree	Even	38	4.2%
Reflective	Mixed	Positive	31	3.4%
Reflective	Agree	Even	31	3.4%
Reflective	Agree	Positive	25	2.8%
Reflective	Disagree	Even	23	2.5%
Non-reflective	Disagree	Even	13	1.4%
Content-free	Mixed	Negative	12	1.3%
Reflective	Disagree	Negative	6	0.7%
Non-reflective	Disagree	Positive	5	0.6%
Non-reflective	Mixed	Negative	5	0.6%
Reflective	Disagree	Positive	3	0.3%
Non-reflective	Disagree	Negative	3	0.3%
Reflective	Mixed	Negative	3	0.3%
Content-free	Disagree	Positive	2	0.2%
Content-free	Agree	Negative	2	0.2%
Non-reflective	Agree	Negative	1	0.1%
Content-free	Disagree	Negative	1	0.1%
Reflective	Agree	Negative	0	n/a
Content-free	Disagree	Even	0	n/a

The figures in Table 3 show marked disparities in the rates of occurrence of the different types of comment. By far the most common is the Positive/Content-free/Mixed category, accounting for more than a fifth of all comments. Since this comment type makes no mention of the module content, and takes no particular propositional stance regarding the original blog entry, it might be thought to be of little educational value. However, the positive affective tone

serves to make the blog environment a supportive and welcoming place for the expression of ideas as demonstrated by the typical Positive/Content-free/Mixed comments shown below:

Do not worry about your knowledge of portals. Reading your entry I can appreciate that you - like everyone else in the class - is starting to have a better knowledge of this technology. Your analogy relating portals with programming languages it is also pretty good.

Sounds like a hard topic you've got there Craig. Some teams have got topics like causes, symptoms, etc. Sounds a bit easier. You'll actually be looking at how to solve information overload. I'm sure you'll succeed in the end :-)

Well put Simon. I was wondering what happened at Monday morning's lecture. Reading your entry I could almost envisualise the entire lecture. Would have been nice to some personal comments in there to add a final touch to the entry. Still, straight to the point and crystal clear understandability. Nice one.

The same kind of support can also be derived from comments of types Positive/Non-reflective/Mixed, Positive/Content-free/Agree and Positive/Non-reflective/Agree. These comments serve more to encourage the original author and other participants than to debate matters of content. From this point of view, they form a cognate group that might be labelled 'Supportive'. Other such groupings of comment types are shown below in Table 4.

Table 4 - grouped categories and associated frequencies

Group	Included categories	Interpretation	No	%
Supportive	Positive/Content-free/Agree Positive/Content-free/Mixed Positive/Content-free/Disagree Positive/Non-reflective/Agree Positive/Non-reflective/Mixed Positive/Non-reflective/Disagree	No deep consideration of module content, but clearly encouraging to other participants	358	40%
Trivial	Even/Non-reflective/Mixed Even/Content-free/Mixed Even/Unreflective/Agree Even/Content-free/Agree Even/Unreflective/Disagree Even/Content-free/Disagree	No clear reflection on module content	334	37%
Reflective	Positive/Reflective/Agree Positive/Reflective/Mixed Positive/Reflective/Disagree Even/Reflective/Agree Even/Reflective/Mixed Even/Reflective/Disagree Negative/Reflective/Mixed Negative/Reflective/Disagree	Engaging with module content at a relatively deep level	189	21%
Destructive	Negative/Content-free/Mixed Negative/Non-reflective/Mixed Negative/Content-free/Disagree Negative/Non-reflective/Disagree	Comments with negative affective tone, and making no contribution to the debate	21	2%
Unexpected	Negative/Content-free/Agree Negative/Reflective/Agree Negative/Unreflective/Agree	Logically unlikely	3	0%

This slightly different perspective on the overall nature of the blog environment also shows that the majority of comments are supportive with a negligible number of destructive postings. In fact, there was only a single case of extreme destructive behavior that might warrant being labelled a “flame”. This was coded as Negative/Unreflective/Disagree:

How do you know that the team needed you to perform the tutorial task if you were not there? [...] Also, have you not let yourself down by not attending the tutorial and finding out what we did? I would foresee your answer being “No”, but since you do not know what we did in the tutorial then I would probably say you let yourself down by not experiencing some of the simulated problems associated with information

retrieval. So, in fact, you cannot rely on yourself because you did not show up. So therefore "you" cannot rely on anyone. Such a lonely world for the big headed people isn't it? I understand you may have had a bad day and are under some stress, but misinformation? How do you know it is misinformation? [...] You are a rambling idiot.

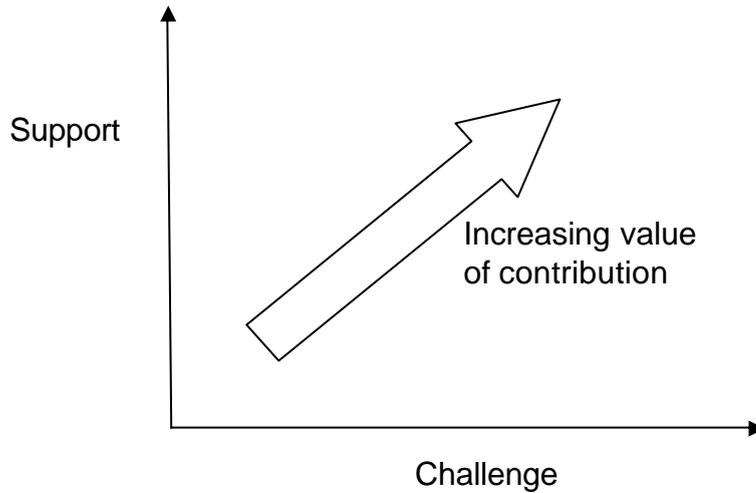
The category with the smallest membership is labelled "Unexpected" since the existence of comments that are negative in tone and which also express agreement with the original blog entry would be unlikely. This is borne out by the data since the number of examples is negligible.

In the second largest category of comments are those which make no great contribution either to the supportive nature of the environment, or to the discussion of module issues. These comments can be seen as the result of the students' obligation to comment each others' blogs in order to avoid losing marks for the course assessment, and may be interpreted as a symptom of the requirement for students to contribute to a synthetic blog community.

It is worth noting that very few of these comments related to "housekeeping" issues. The structure of the blog environment with its clear ownership principle would seem to be the reason for this. However, a further attitudinal investigation would be necessary to discover the truth of this assumption.

The distribution of comments in the final 'Reflective' category can provide an insight into the quality of reflection. As discussed earlier, the value of the blog format is that it provides opportunities for individual students' ideas to be challenged by others. This means that comments that are reflective, and which take up an opposing position to the original blog entry, are of the greatest value. In contrast, those that tend to agree with the original blog entry are of lower value. When a challenging comment is positive in terms of its affective tone, it is highly likely that it will be to encourage further reflection and debate. This interaction between propositional stance and affective tone is shown in Figure 1. (Note that Figure 1 also provides directionality for the content of Figure 2 below).

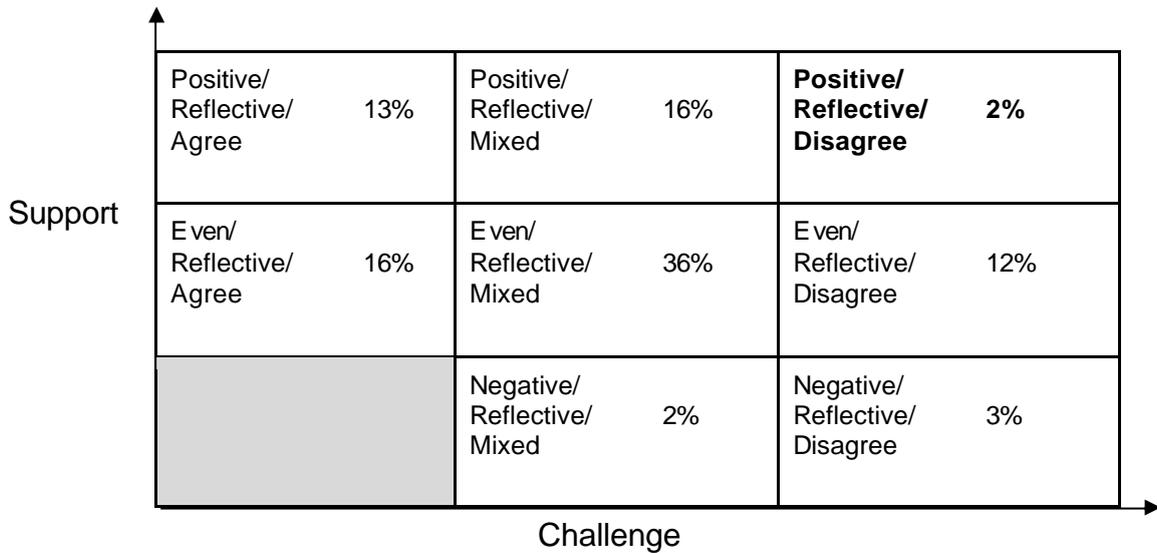
Figure 1 - Relative value of reflective comments



The reflective comment categories in Table 4 can be used to show the distribution of comments in terms of their relative value by dividing Figure 1 into a series of eight cells (bearing in mind that comments coded Negative/ Reflective/Agree are not expected). Plotting the reflective comments in this way shows that the supposedly most valued category of Positive/Reflective/Disagree is not well represented in the data. The reasons for this cannot be determined from the available information. The underlying cause could quite possibly result from the design of the module, rather than some characteristic of the blog environment. If further investigation were to prove this the case, the proportion of comments falling into this category could conceivably form the basis of an objective performance indicator for the module. An increase in the number of supportive, yet challenging, comments could be taken as an overall indication of the level of reflection on the part of the students.

(The paucity of comments that ostensibly matched the category most valuable category of Positive/Reflective/Disagree has led to greater attention on the role of the “blog hints”. Careful attention to wording is expected to provoke a more critical approach in the students who comprise the future cohorts of the module.)

Figure 2 - Distribution of reflective comments as a percentage of total reflective comments



In general, the distribution in Figure 2 shows that most reflective comments are less supportive than the average. Students who were motivated to discuss module content at a less superficial level perhaps felt less of a need to surround their thoughts in supportive language. Indeed, it is in the most populous category of Even/Reflective/Mixed that the clearest examples of peer support can be found, as illustrated in the example comments below:

What you've described as a community... I'm unsure whether it's actually a community [that exhibits] creative abrasion. A community has similar interests and [individuals] work together... creative abrasion [occurs between] people from different backgrounds (not necessarily just education) that have common knowledge, and work together doing creative problem solving. I guess you could perceive it in both ways, although I lean more towards the creative abrasion side.

You wonder why you need to follow this course because you are only going to do some programming???? Eh, wake up guy, if you are doing this module, there is a very good reason!!! I don't know if you have already done a placement in a real organization, but if you think that your job is only to going to [involve going to] work, sitting down in front of your computer, and programming stuff, you're wrong...How will you report what you have done and inform your manager that you have done some work, or that you need more information to accomplish a task?? And if you need

some information from others? How can you do that if nobody knows how to share their knowledge? It is just my point of view, but try to think about it, especially if you are a foreign student. (I am one too). Those technologies we are using change very rapidly and if you don't know how to be aware of this evolution, you will never work efficiently.

7. Discussion

It can be seen that the deployment of blogs in this particular module created a very supportive environment for communication amongst the students: the largest single category of first-level comments serves no other purpose than to encourage other participants. Thus, the main finding of this work is that the blog environment encourages positive and productive exchanges in educational settings. In addition to general mutual support, the data analysed provides examples of explicit peer aid in terms of clarification of the purpose and concepts of the material covered in the module. This aspect of blogging – where a student may adopt the role of peer tutor – is in line with reports from earlier studies (e.g. Walker, 2005). Not all of these benefits can be offered to students who report their learning in closed environments, such as the form of a straightforward individual learning journal. In addition, although it is possible to build interactivity into the creation of traditional learning journals – for example, by prompting class discussion on the basis of journal entries, or asking students to trade entries and respond in writing – the blog environment offers wider possibilities, especially for those in large groups who study remote from one another. These findings on peer support add to what has already been articulated in the literature on the theme of blogs and community engagement. They draw attention to how the software provides more than a mere technology platform for interaction: it also underpins the scaffold of social infrastructure amongst class participants. Of particular note here is that the strength of these findings is more prominent here than has been articulated in previous studies.

As far as reflective learning is concerned, this study has not generated evidence to match the levels of enthusiasm of previous publications which champion the value of blogs as mechanisms to boost levels of reflective learning (e.g. Clyde, 2005; Downes, 2004). However,

it is worth emphasising again here the limitations of the scope of this study: it concentrated on *comments made* on main blog entries, rather than original postings. In addition, given that a fifth of the comments exhibited some degree of reflection, it is suspected that a more extensive investigation of the main blog entries would have revealed a good level of reflection. Since the analysis of the distribution of reflective comments by affective tone and propositional stance shows that a significant number do challenge the views expressed in the original blog entry, it can be argued that the blog environment constitutes a useful tool for reflective learning in a range educational of contexts, even when it emerges in a somewhat contrived and inauthentic setting. It should also be noted that observations from this data set reveal that the degree to which comments contribute to peer learning is related to the degree of reflection in the comments.

It has been demonstrated that the findings of this work have added to the body of knowledge on the role of blogs in creating a sense of community and encouraging reflective learning in an educational context. However, they have not revealed any further significant insight into the two other prominent themes of the published research literature on educational blogging as discussed above: (1) how blogs encourage thinking through writing (for example, Nardi et al., 2004), and (2) how they can be used to disseminate information about the class (Downes, 2004). It might be argued that this is not surprising given that the primary purpose of the research was to examine blog activity with reference to peer learning and peer support, and the sample postings were those of the students rather than the instructors who might be expected to use their own blogs to convey to the cohort "housekeeping" messages about class arrangements. A further explanation, which is related to the issue of thinking through writing, is that studies which promote this blog function focus on blog deployment in courses where the actual subject of study is writing. For example, the work of Brooks et al. (2004) considers a number of classes such as English, creative writing and composition theory, and that of Walker (2005) concerns a course on web design and online communication. It is the intention of these classes that the blog environment should encourage improvement in writing skills. In contrast, this was not a goal of the module under examination for the study reported in this paper.

A number of possible avenues for further investigation of the themes discussed in this paper can be suggested. These include: a more extensive content analysis of a set of main blog entries themselves to establish the level of reflective activity of the students; a similar investigation using a finer-grained coding scheme for the reflective dimension in order to determine the relationship between module design and reflective postings; studying the lines of discussion across blog environments, for example to establish the levels of sustained interaction (as opposed to simple reaction) as might be more readily achieved with technologies that offer opportunities for extensive threaded discussion; a longitudinal study year-on-year using the same coding scheme to establish the accuracy and usefulness of the coding of reflective comments to indicate the overall quality of the learning experience provided by the module. It would also be worthwhile to extend the scope of data collection to investigate students' perceptions of the extent to which blogging encourages reflective learning and provides peer support. This could be achieved through the use of a survey of, or interviews with, class members, as has been the practice in other studies of blog adoption in educational settings (e.g. Brooks et al., 2004; Williams & Jacobs, 2004).

8. Conclusion

In discussing an empirical study on a sub-category of the journal blog, the work presented here contributes to efforts to enlarge the body of research literature on blogging. It has demonstrated that blogs offer comparable and additional benefits to predecessors designed to encourage reflective engagement with teaching material, such as learning journals. Most notable is the level of shared peer support that can be engendered in online communication between class members. To date this factor has not been acknowledged as widely as other benefits of integrating blogs into class delivery, such as the blog space as a locale for students to practice and improve their writing style.

Since implementation of technology in an individual educational setting is contingent upon a variety of uncontrollable variables, it is almost impossible ever to argue convincingly that the outcomes of a specific implementation are generalizable in fact, rather than in potential.

Taking this into consideration, it may yet be argued that the impact of the study be felt both at

the local level of this particular module, and beyond as others in the field consider adopting blogs as part of the curricula. For example, within the context of a module such as the one discussed here, it is recommended that blogs be adopted more widely to encourage peer support and reflection. From the broader perspective of LIS education, this study has demonstrated that the efforts of those who have integrated blogging into the curriculum can be evaluated and found to have a beneficial impact on students' learning, most significantly in the provision of a supportive environment for learning through online discussion. LIS educators may draw on this to extend blogging in the classroom beyond the current dominant practice of demonstrating the phenomenon as novel software for the dissemination of information, to incorporating it into curricula as a tool for enhancing the learning capabilities of those under instruction.

Thus, the main significance of this research to the LIS community is its potential for impact in three ways: (1) as an inspiration to other LIS educators to evaluate software tools adopted with the intention of enhancing student learning, particularly in cases where there is an absence of empirical data to justify the claims made for the software; (2) as confirmation that blogs are successful in creating supportive learning environments; (3) as a signal that blogs have a much wider role to play in the domain of LIS education than has been previously articulated in the literature.

Acknowledgements

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Footnotes

Footnote 1

Blogs are also maintained by individuals who wish to document their lives online.

Footnote 2

For example, only 45% of discussion board dialog observed by Kirkpatrick (2005) could be classed as "work".

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