Blogs, reflective practice and student-centered learning

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ABSTRACT
Blogging can be used to enhance education by encouraging reflective practice. We present a study in which a final year HCI course was constructed around regular blogging activity. We discuss the role of blogs in providing a social mechanism for the student body and in acting as a conduit between classroom and practical examples. We analyze the blogs from a quantitative and qualitative perspective, and show that the students found it a useful and effective addition to their learning.

Categories and Subject Descriptors
H5. Information interfaces and presentation (e.g., CHI)

General Terms
Experimentation, Human Factors

Keywords
Blogging, education, cultural probe, reflective practice.

1. BLOGS AS AN EDUCATIONAL TOOL
Weblogs have become very popular recently [8, 13], as a fast, easy to use way of sharing your thoughts with others on the internet. Weblogs (or blogs) are temporally ordered personal commentaries published on the internet, and cover a wide range of topics from the personal diary through to news sites, political comment, technical and social issues, and gossip [7]. Because of their web-based nature, they encourage external referencing to other internet sites, allowing bloggers (people who blog) to comment on news, others opinions – in fact, on anything that they come across in the wide world of the web. Often, bloggers find other bloggers who share similar views or interests, and highly interlinked communities grow up, sharing information and opinions [9, 10]. Blogging technologies have made the publication of blogs much simpler, enabling users to create usable, aesthetically pleasing websites with no prior knowledge of HTML, opening up the world of blogging to any user who wants to participate [1, 10]. Because blogs are designed to be read, and are referenced by other bloggers who are often regarded as colleagues or friends, they encourage frequent, often daily, postings.

The engagement that many users have with their blogs has not gone unnoticed by educationalists [11, 15], who have seen them as a potential way to engage students more fully with the topic. They appear to have potential as tools for supporting student sharing of information, for engaging them with the subject by using cool new technology and relating their work to the outside world, and, by the very nature of the blogging activity, supporting reflective practice [4, 14]. Reflective practice is an approach to learning that encourages thought about what has been experienced and seen, which can then drive new theories and investigations to test those theories, leading to new experiences that may, or may not, validate the original ideas. This leads to them being modified, extended, and refined, and the cycle continues. This is shown in Figure 2, derived from Kolb [6].

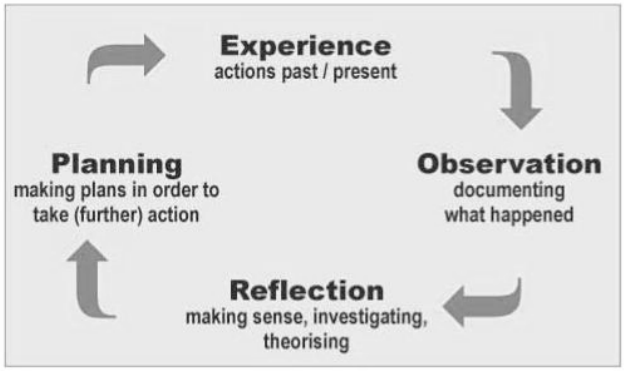

Figure 2: Reflective practice: its place in the learning cycle

Originating in the nursing sphere, and originally focused on aiding learning from practical subjects, reflective practice has a place within more conventional education; its encouragement of students to consider the implications of what they see, to investigate how what they know relates to practical issues, to find examples that prove or disprove a particular approach; all are important aspects in moving students through the four stages of education and awareness that have usefully characterized as: unconscious incompetence, conscious incompetence, conscious competence, unconscious competence. In HCI practice, this equates to a transition from uninformed programming through to experienced 'craft' practitioners/researchers/ designers who instinctively do 'good' things. In order to encourage reflective practice, we therefore need to support the main elements of the learning cycle within the context of any course. Blogging appears to offer this opportunity.

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From an activity perspective, blogs encourage regular postings, which forces bloggers to think about what it is they are to write about. Being an internet activity, blogs encourage exploration of the internet and hence give users a wider experience of many issues that are of relevance to HCI – website usability, design, new technologies, social impact of systems, and so on. In order to blog about such things, users need to experience them, observe them in detail, and then distill their thoughts, views and observations into meaningful comment. They may encounter opinions or experiences that challenge their current notions of the world, or of a particular HCI issue, or a previously held belief about something (in itself a good thing) and will then have to plan other explorations or activities in order to better understand what they have observed. This cycle of experience, observation, reflection leading to theorizing and understanding, or to looking into things further, maps directly onto the reflective practice cycle.

From a social and pedagogical perspective, blogging provides two advantages. The first is that it can support a sense of community amongst the students. They can read and comment on other students postings, and can learn from both experiences that others have discovered, and from the insights of their peers regarding those experiences. In this way, exceptional students can forge into the unknown, being opinionated, making deep insightful comments on the state of the world, the role of HCI, or anything else, whilst the weaker students are pulled along in their wake, reading and learning, able to make their own sense of things in their own time. In addition, by making their work semi-public, students can see the sort of activities done by other students and hence have transparency on the amount of work that is required. Because others can also see their level of activity or inactivity, peer pressure should exert an influence and encourage them to maintain at least an acceptable level of input into their blogging activities. Even without the student undertaking any additional research work or internet exploration, the act of forcing them to write a blog entry means that they have to consider what they wish to say, and hence it forces them to think, even for a short time, about HCI in some context or other. In addition, the creation of a blog on the topic is akin to the student creating a portfolio relating to HCI issues, and portfolio development is known to be useful in developing deeper insights in the learning process [3].

Because blogging is relatively new, it also represents a 'cool' technology, and playing with such approaches feels much less like learning than reading books or doing exercises, and hence it engages more students more readily. As an accessible Internet technology, requiring nothing more than a web browser and internet access, it also allows students to contribute to their blogs whenever they are able, at times to suit them: in the world of the modern student, this is becoming increasingly important as many of them have to undertake paid work for a large number of hours and being able to fit aspects of their learning around the work that pays for their courses is crucial.

It therefore seems that blogging should be able to support reflective practice, which should have the effect of connecting the work done in the lecture room with experiences the students have had in the outside world, and reinforcing the progression from episodic experiences of HCI in the classroom to a more detailed semantic understanding of the issues in context.

2. COURSE COHORT, DESIGN AND PEDAGOGY

The students in this study were computing students, who had opted to do a newly-offered HCI course as a follow-up to an introductory course done the previous year. The main goal of the course was to engage people with the subject of HCI – to provide them with the prompts to understand and challenge both technical systems and non-technical ones. We worked with a cohort of 36 students, all of whom were on the HCI course. 26 of the students were final year undergraduates and 10 of them were Masters students; all had previously undertaken at least one undergraduate introductory level course in HCI.

We firstly undertook a simplistic enquiry into what it was valid for the course to cover, by asking the students to identify what they felt HCI was about. The results, unsurprisingly, reflect their previous exposure to HCI, which is scaffolded on aspects of the ACM curriculum. After this discussion, we gave the students input to designing the course by identifying the main areas of interest to them, allowing them to define the areas of the course that they felt to be critical for them, to provide them with a tailored HCI experience that met both their needs and their interests. The course focused on the user-centered design lifecycle, discussing theories tools and techniques as we encountered different aspects.

Pedagogically, the course was constructed around four simultaneous strands of blended learning[2]: lectures, directed reading, a mini-project, and blogging. The lectures covered the main principles of the topics within the course, giving the key information and concepts to the students, but with a primary focus of motivating them to follow these up in their own time outside of the lectures. To support this, we offered a set of directed readings on related topics, mainly web-based for easy access. In addition, the students did a mini-project to experience user-centered design from start to evaluated prototype, and had directed reading on issues related to the lecture structure outlined above. The final piece in the pedagogy was to get them to create and maintain a blog on HCI issues. For this investigation, they were asked to blog on any HCI issues that they considered to be relevant. This work was not directed in any way – we left the choice of topic up to them. The aim was to explicitly get them to cover and integrate wider material into the work covered in the lectures. Implicitly, the process encouraged reflective practice, helping them evaluate their learning, and develop it in new directions.

3. QUANTITATIVE ANALYSIS OF BLOGS

We have analysed the blogs produced by the students, counting the entries and looking at the sizes of postings. Of the 36 blogs, six contained either no information of any substance at all, or were corrupt, or refused to be analysed. Of the 30 blogs analysed in detail, there were 827 individual posts (an average of 27.56 posts per blog – over the period of 11 weeks of the course that equates to 2.51 posts per week: more than the 2 per week we suggested was necessary, providing the first evidence that this was a popular approach with the students). The average posting had 179.89 words, with a standard deviation of 179.77. Clearly this is not too useful: a more relevant measure is the median count of 137 words; the modal value was 50 words. Three blog entries had word counts of greater than 1000 – these discussed blogging and communities of practice (1073 words); the ethics of blogging (2671 words); and design approaches in the construction industry (1032 words). A graph of word count versus number of posts with that count is shown in Figure 3 – the >1000 word blogs are omitted for clarity. Of these 827 posts, 180 (22%) of them referred to other blogs, either those of fellow students (the majority) or to other bloggers. 404 (49%) had references to non-blog URL's – other websites – whilst 483 (58%) had references to either blog or other websites. This fits with a common pattern of usage of blogs, in that a majority of the postings refer to other events on

the web or in the blogosphere that are commented on or referred to by the blogger.

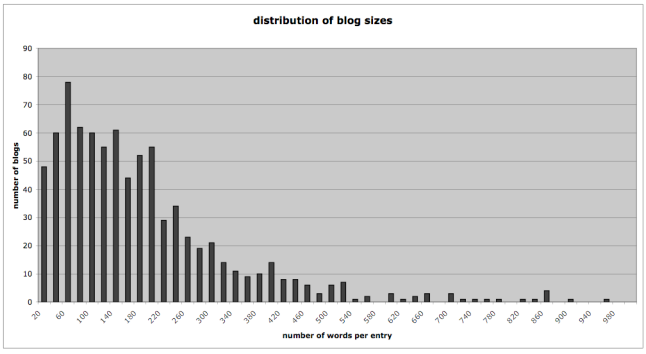

Figure 3: Distribution of blog sizes

404 posts (42%) of posts had no references to other websites at all. These posts tended to be either direct reflections (or summaries) of a lecture, or reporting on their user-centered design project. The students were explicitly asked to report on the progress of their project in their blog, which clearly affected the statistics on external references, but had clear pedagogical purpose in that it allowed them to present their concepts and ideas to their fellow students and to receive comment and feedback on their design from their peers, and to write about experiences, observations, reflections and plans (the reflective practice cycle).

We wanted to understand the students' approach to blogging, and in particular whether they treated writing about other people's blogs differently to writing about other websites. To address this, we examined those postings that referred to blogs and those that examined other websites, and undertook a student-t test to determine if there was a significant difference in posting size between these two categories. The results showed conclusively that we could not reject the null hypothesis, that *there was no difference between the posting size for the different categories*. In other words, there is no statistically significant difference between the size of posting that was created that refers to a blog entry compared to referring to something on an conventional website. We can (loosely) conclude from this that the students viewed other blogs and other websites as not hugely different to each other, and worthy of roughly similar comment.

Comments in blogs allow us to investigate the extent to which the students received feedback on their opinions and views, and how much of a dialogue and community grew up around the blogs. None of the instructors on the course made comments in the blogs. The statistics are as follows. There were a total of 136 comments: the mean number of comments is 0.164, σ=0.562; the maximum number of comments is 4. There were 52 posts (6.3%) with one comment, 20 (2.4%) with two, 8 (1.0%) with three, and 5 posts (0.6%) with 4 comments. This suggests that the students didn't hugely use commenting; there are rarely long 'comment' conversations, and most posts are uncommented on. Conversely, it is still an activity that has a level of participation that is not trivial, and validates the point that students could get wider input on their ideas and that blogging helped build communications.

4. QUALITIATIVE ANALYSIS

By providing the students with the freedom to investigate anything that they felt to be relevant to HCI, and the tools to allow them to share their perspective with us, we are also able to use the blog as a cultural probe [5], using it to discover their perspectives on what HCI is about, what it covers, its scope and perspective, as they perceive it.

In order to understand the results from a qualitative perspective, we have borrowed techniques from a grounded theory approach[12], categorizing the topics within the blogs by the main issue that they address. Where an entry doesn't fit into an existing category, a new category is created and the entry recorded under that. Most entries appear in only one category; a few are classified under two categories where this is clearly sensible. Therefore, the total number of blog entries is slightly less than the sum of numbers in the categories, but not by much.

Some of the main categories we found in the analysis were: *blogging, practical project, design examples, HCI examples, new technology, software, privacy, cool sites, input devices, comedy, gaming, creativity, Microsoft, elderly/disabled, mobile, website design, politics, education, futuristic systems, security, social comment, lecture material, legal, personal, operating systems, other.*

Blogging, and *practical project* were discussed with far greater frequency than the other topics, though this is unsurprising: students were self-reflective about their blogging activities, and the reminders given in lectures would have created a greater awareness of blogging issues; as for project discussions, they were expected to commentate on these in their blogs as time progressed and so we would expect their to be ongoing postings about these issues. These project postings proved popular with the students, who felt that exposing their work to their peers allowed the others to see what efforts they were putting in, as well as allowing a wider audience to comment and discuss their new concepts. Typically they reported on the key stages of the development: creativity and concept generation, user discussions about possible designs, settling on the design/product type, questionnaires on functionality and usability, prototype tests, redesign, and conclusions – sometimes in separate postings, sometimes combining more than one topic. Whilst we did not quantitatively analyze the size of just these postings, observation and reading of the blogs suggests that postings on project topics were significantly larger than other postings.

For the other topics, what is interesting is the range of things that the students discussed, and that they felt was relevant to HCI. However, most of these topics were at least mentioned in at least one of the lectures, suggesting that the students did not often bring completely new concepts into the domain and discuss them. Interestingly, particularly in the domain of design examples and interaction examples, they found and commented on *new* examples of (usually poor) design that they criticized effectively. For example, one student comments on a vending machine:

"*Kick the stupid machine:* Fast service, easy to use. You simply put a coin in the machine and make your selection. No need for running to a store to get what you want. You have the solution just next to you. Chocolates, crisps, soft-drinks, condoms. Anything you need, whenever you need it. But I still HATE these machines, both for technical and psychological reasons.To be honest the first time I tried to use one was a few months ago. I don't know why, I guess I just never needed to use one before. Anyway, the first experience I had with a vending machine it was quite 'painful'. I wanted a coke, so I went near the machine and put some coins in it, without bothering reading the instructions and pressed my selection. And here we go...."

As an example of the range of issues on which they reflected, he is an example of a somewhat philosophical musing on design for print:

"What's the measure of well design print media? What is the measure of well designed print media? Is it Appropriateness? Beauty? One can claim that it is all and none of the above. The trouble with print media is that it is extremely difficult to turn a set of words and ideas into a physical object that will express them effectively[…]."

The posts of some students clearly influenced others, thus providing evidence for both the social aspects of learning that blogging was supposed to engender, and (in this case) for reflective disagreement. ("Jat" is a student on the course)

"Whilst reading Jat's post about the interface of rss, I began to think of why rss might not have become hugely popular. Just because it is new is a valid reason but it isn't enough. Jat went on to say that simplicity is the key when it comes to accessing rss updates from sites. But I think I disagree with some of this…"

It is important to note that these and the other topics that received coverage are not directly those that you would obtain from the course outline and description: these topics are more focused on specifics that occurred in lectures or were key issues at the time of them blogging. This provides some evidence that the students were linking their classwork to the real world, seeing HCI in the wild as well as in an educational context.

5. COURSE EVALUATION

Being a new course, previous years' results were not available for comparison, so we compared the course to the other modules taken by the students. Questionnaires were distributed, based on a 0-4 scale, with 0 bad and 4 excellent. The course achieved a 100% return rate of questionnaires. It was well received: Scores of 3.25 on value (c.f. average score on other modules of 2.27), 3.5 on interest (c.f. 2.3), 3.31 on web support (c.f. 2.12) and 3.35 on happiness with choice (c.f. 2.38). Value, difficulty level, amount learnt, speed, clarity, interest, handout quantity, handout clarity, usefulness of web support, appropriateness of exercises, and happiness of choice were all better than the average on other modules.

6. CONCLUSIONS

We found the use of blogs to be an effective tool for supporting students in reflective practice, for connecting their classroom experiences to the outside world, and for allowing them to receive greater feedback from their colleagues on their practical design exercise than they might otherwise have done. The students enjoyed the approach, and gave the course high satisfaction marks overall, suggesting that blogging is an effective, engaging approach for supporting other educational practices.

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