# Adding more push to an HCI learning website

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## 1. Abstract

Websites are good examples of "pull" technology. They are typically passive and students obtain information from a course website only if they choose to go to the website and navigate around it, pulling from it whatever they desire. By way of contrast the classic example of "push" technology is email. If we assume that email users always have an active email client on their local machine that is configured to flag new messages as and when they arrive, perhaps by means of a sound or a popup message, then in this situation newly arrived messages are "pushed" at the user by the intrusion on their attention.

Our HCI website at Portsmouth is used in a form of hybrid learning. Students attend conventional lectures and tutorials, but the website provides lots of *scaffolding* designed to keep the students aware of what they need to do, plus course information including copies of materials used in lectures, coursework exercises, a schedule of events, etc. As such it is essentially pull technology. In previous years the push element has comprised old-fashioned telling the students in lectures and tutorials what, when and where to look for things on our website. This year we have supplemented the "verbal push" with a more "automated push"; by including an RSS stream in our website. Students are now able to subscribe to the RSS feed and obtain relevant notices about what's new, and what is expected of them next. This particular push technology is predicated on the assumption that students will have running on their local machine some news reader software, or a web based reader such as Bloglines, or perhaps they regularly check their FireFox bookmark of our website. (The FireFox browser includes software to include RSS information as part of the bookmarks.)

Our use of RSS is still in its infancy, but we expect it to function as a further communication channel for our local students. In a situation where remote students study by distance learning, without the benefit of regular face to face lectures, we would expect the RSS feed to be of considerable value in reminding the students about course news and what to do next.

This paper examines the behaviour of students on our website in the past and compares this with recent behaviour to try and identify if the RSS feed has made any difference. We also speculate on the merits of introducing a course website in stages, with each stage preceded by an RSS fanfare. This is compared with presenting the website as a whole, fixed entity from the very start of the course.

## 2. RSS background

RSS is an acronym, but it isn't clear what it actually stands for, variously candidates such as Really Simple Syndication or Rich Site Summary have been suggested. Although it may not be clear what its name is, what it actually does is to provide a set of dynamic bookmark-like links to web resources.

The key difference is that the content of this set of bookmarks is changed by the site author and not by the browser-using client. Hence the term 'push' technology is often used to distinguish between this and a conventional bookmark, set by the browser-using client, which is 'pull' technology.

An RSS newsfeed is implemented as an XML file, with a standard set of tags for news items. The most important elements are a title, a url, and a description (although many additional elements can be used).

A variety of RSS 'standards' exist. Currrently we have used 2.0 which seems to be supported by the current RSS tools. (Pilgrim, 2004)

RSS first appeared in 1997, but it was not until the increased popularity of blogs that RSS has become more widely used. Originally RSS was designed to work as a 'newsfeed' providing a list of late breaking news items, UK news organisations like The Guardian and the BBC provide RSS summaries and links to news pages in their websites.

It is not surprising that Librarians were one of the first groups to adopt RSS. These cover use of RSS to promote blogs (e.g. Fichter, 2003), announcements and book acquisition notification, and information about online journals.

RSS is accessed via an RSS 'aggregator' which might be a stand alone piece of software (such as Radio Userland), a web site system (such as My Yahoo), or a plugin for a browser or mail client (such as Newsgator). Recently access to RSS feeds has become easier as new releases of web browsers, such as FireFox and Safari. Both have RSS news readers 'built in'. These make acquiring a newsfeed much easier for users, and only a little more

complicated than adding a normal browser 'bookmark'. (Wusteman, 2004, Mozilla, 2005)

## 3. The 'information architecture' of our unit

Our unit Human Computer Interaction Design is a conventionally delivered unit (20 cats points), with lectures and practicals. The website for the unit provides access to online lecture notes, tutorial and practical exercises, and links to other web resources. Since 2000 the coursework assessment has been integrated into an extended, project based learning activity that spans the duration of the unit. This activity involves web based monitoring of project stages, online submission of formative work, and online feedback, and is supported by simple web based data processing tools. As a result the unit website is more than a list of static resources, but is also a dynamic and changing tool to assist students manage their learning as the unit progresses. (Crellin, 2003, Crellin and Rosbottom, 2004)

We have usually 'pushed' students towards the relevant parts of the site in lectures, and practicals, by 'reminding' them about impending deadlines, and the web resources they may need to use in support those activities.

We have used a variety of approaches to manage the unit website, and have collected detailed information on individual and group use of resources over several years. A typical daily total count of student web site access shows a gradual decline as the unit runs. We often refer to this as the "declining interest curve", although it probably represents the way students initially explore web resources, and then later access the parts they remember as being interesting or relevant in the current part of the unit.

The inclusion of push technology is intended to help us focus students' attention on the parts of the website (both dynamic and static) that are relevant in each coming session. This can in part be seen as a 'task allocation' problem. By using RSS we assist the students to find relevant resources without relying as much on their internalised mental models of the website structure.

Currently RSS is provided in the unit via FireFox compatible 'add RSS bookmark' code added to the unit website, and via a web page that acts as a unit RSS aggregator. Hence users of modern browsers, and users of older technology such as Internet Explorer can both access the RSS support within the unit.

Evaluation of the impact of RSS looks takes two forms. Qualitative data from survey and questionnaire, and quantitative data from monitoring user activity in the website. Survey and questionnaire data collection is currently underway.

Changes in the proportion of usage of different parts of the web site in different stages of unit delivery may indicate the adoption of RSS signposts. We can see some difference in the "decline of interest " curve, in that if anything the post exploration dip is deeper than in previous sessions. This may be due to extra reliance on the RSS tool to highlight interesting and relevant areas of the website. However qualitative data is needed about the reasons for observed behaviour.

Other indicators (such as increased use of RSS enabled browsers) are also possible indicators of RSS use. Approximately 40% of students have used FireFox during this presentation. This contrasts with 17% students using FireFox in the semester one presentation of the unit (comparison of figures of usage at week 5).

## 4. Dynamic development versus static presentation

Presenting learning materials on day one of a course as a "course handbook", or as a complete website, tends to reinforce the *delivery model* of learning. The well known definition of a lecture as *the transfer of information from the notes of the lecturer to the pages of the student, without ever engaging the brain of either* is a more acerbic description of the delivery model of learning. Course websites make possible a more up to date version of the above definition in which *learning is the transfer of information from the server of the lecturer to the client of the student, without ever impinging on the senses of either*. Daniel Chandler explores this model very well, exposing its strengths and weaknesses. (Chandler, 1994)

Rather than presenting a course as an unchanging static website, would it be better to present it to students as a developing process in which a live website grows from week to week? The intent of such a strategy is to maintain interest and keep the students engaged with the learning process. RSS can be used to post notices, to which students subscribe, keeping them informed of new developments on the website as time goes by.

We are opposed to the concept of providing a course as a fixed entity that can be neatly packaged, tied up with pink ribbon and presented to the students at the start of a course. Such an approach pretends to be professional by virtue of the slick glossiness of the course materials, but fails to recognise that learning is an inherently personal and difficult process. (If learning was as easy as preparing the perfect set of notes governments would not spend so much money on their educational infrastructure.) Learning has to be tailored to the needs of the individual students, and the model of *conversation* is much closer to the nature of learning than the

model of delivering content. (Pask, 1975; Laurillard, 1993)

As W.B Yeats put it: *Education is not the filling of a pail, but the lighting of a fire.* Yeats is referring to the importance of motivation. If students can be motivated to take a deep interest in a subject they are able to overcome the difficulties of learning. We believe a course website that develops in parallel with the increasing understanding of the learners is inherently more interesting and motivating than the static website that never changes. Our coursework model employs problem-based learning, and is managed through the website as described above. Research suggests that this approach is more engaging and motivating (Savin-Baden, 2000)

We want to be able to modify our PowerPoint slides on the fly during lectures and store the updated slides on the website. We want to capture artefacts created in lectures such as mindmaps, or even just questions and answers, and copy these to our living website as a record of our activity. We occasionally have guest lecturers; their contribution is not usually available in advance, but we want it on our website. For these reasons and more we want students to use our website as a developing resource that is responding to their learning needs. Of course the dynamic environment we are describing is in great danger of getting out of control so that, if we rely solely on pull technology, maybe only the member of staff doing the updates knows the latest state of play. The news stream via RSS can help keep everybody aware of developments by publicising and recording changes in the website. This is especially important when, as in our case, there are two or more members of staff sharing a common website.

RSS news is essentially asynchronous so students who don't check the feed every day can still catch up on all the news since they last looked.

While it is tempting to teach a course by building the course website *ab initio* as the course proceeds, this may not be the best approach for two reasons. Firstly the highly practical consideration that lecturing staff are extremely busy and may be unable to keep a course website up to date in a timely manner. More importantly it may, despite everything said above, be preferable to prepare a (fairly) complete course website in advance. Students who like to read in advance and explore the whole course, or what comes next, benefit by having a more complete resource. Building a website week by week presumes that there is a "best way" of doing the development, but such a supposition fails to take account of the variability in human learning where what may be "best" for one is less than optimal for another. The key thing for

students to understand is that the "complete" course website presented on day one is subject to modification in the light of how the course develops. The dynamic vivacity we are seeking can be approximated very well by updating the website in the light of current course activities and interests, and by using RSS to send a message to subscribers in order to keep them up to date on any changes. This last model where a relatively static website is modified as a course proceeds, and news of the modifications is broadcast via an RSS feed, is the model we propose to develop in our future teaching.

## 5. Conclusion

Our HCI website is just one resource in our blended learning approach. The key function it satisfies is that of informing the students about what they need to do, particularly with regard to their coursework activity, but also by providing a schedule of lecture and tutorial topics. We find that the website is far more efficient as a way of informing than talking to students in a lecture, or even by emailing them, provided that is the students actually read it. Monitoring student usage of the website suggests that while the number of accesses declines during the progress of the course (with peaks prior to key assessment points), the level of access remains relatively high. We expect our use of RSS to help maintain interest in the website, thus reinforcing its function as a way of disseminating information.

The website also acts as a repository for course notes, etc. Our use of RSS will help reduce the risk that any changes we make to the course content during a presentation of the course will go unnoticed by our students.

## 6. Notes and References

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