

**Title: BLOGS, PODCASTS AND WEB 2.0 TOOLS FOR DEVELOPING SOCIAL NETWORKS AND COLLABORATIVE PROFESSIONAL KNOWLEDGE DEVELOPMENT IN HEALTH AND NURSING INFORMATICS CONFERENCES.**

**Primary author and contact person:**

**Author** Peter Murray

Centre for Health Informatics Research and Development (CHIRAD), UK  
Coachman's Cottage, Nocton Hall, Nocton, Lincoln, LN4 2BA UK  
Email: peter.j.murray@btinternet.com

**Additional authors:**

W. Scott Erdley (University of Buffalo, USA)  
Margaret Maag (The University of San Francisco, USA)  
Karl Øyri (Rikshospitalet University Hospital, Norway),  
Rod Ward (University of the West of England, UK),

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**Abstract**

Blogs (web logs), podcasts, and wikis, which constitute a sub-set of what are commonly described as Web 2.0 or social networking tools, increasingly provide international online communication and collaboration among nurses and health informaticians. Many applications are available as libre/free and open source software.

This paper describes ongoing work on the development of an innovative approach to encouraging virtual participation in nursing and health informatics conferences through blogging, which additionally provides a new mode of continuing professional knowledge development. The collaborative and interactive model of using explored blogs purposely differs from the common form of single-author blog or conference report.

A collaborative team of nurse informaticians from several countries aims to foster a community of authors and encourage interaction with blog readers and conference participants.

The intent is to provide an environment for the international health informatics community to engage with formal and informal professional development activities, such as conferences, previously only available to the limited numbers able to attend events in person. The lessons learned from providing blogs and reports from several events during 2004-06 will be discussed. The results of small-scale evaluations, showing the benefits users clearly derive from using blogs, will also be presented. The paper will conclude with reflections on the ongoing, real-life use of blogs which may provide some possible guidance for others, within and outside the health domain, attempting similar initiatives, including the practical and personal factors possibly encouraging or militating against their use.

## **Resumen**

Los Blogs (web logs), podcasts y wikis, que constituyen un subconjunto de lo que se describe comúnmente como Web2.0 o herramientas de redes sociales, proveen cada vez, una mayor comunicación internacional en línea y una creciente colaboración entre enfermeros e informáticos en salud. Muchas aplicaciones están disponibles como software libre (free) y de fuente abierta (open source).

Este artículo describe el trabajo que se lleva a cabo en el desarrollo de un enfoque innovador, con vistas a estimular la participación virtual en conferencias de informática en salud y de informática en enfermería mediante blogs, lo que, adicionalmente brinda una nueva modalidad de desarrollo de conocimiento profesional continuado. El modelo colaborador e interactivo de uso de blogs explorados difiere en sus propósitos de la forma común que se basa en blogs o reportes de conferencia por un solo autor.

Un equipo colaborador de informáticos en enfermería se propone fomentar una comunidad de autores y estimular la interacción con lectores de blogs y participantes en conferencias.

Es nuestro interés, proveer un ambiente que permita a la comunidad de informática en salud involucrarse en actividades de desarrollo profesional tanto formales como informales, tales como conferencias, las cuales anteriormente estaban disponibles solamente para aquellos que podían asistir a los eventos de modo presencial. Se discuten las experiencias en el uso de blogs y reportes de varios eventos celebrados durante el periodo 2004-2006.

Se presentan además los resultados de evaluaciones a pequeña escala, que muestran los beneficios que los usuarios perciben al usar blogs. El artículo concluye con algunas reflexiones sobre el uso de blogs continuadamente, en la vida real, lo cual puede brindar alguna orientación para otros, tanto dentro como fuera del dominio de salud, que intenten acometer iniciativas similares, incluyendo lo referido a los factores prácticos y personales que puedan estimular, o conspirar contra su uso.

## **Introduction**

This paper is based in the authors' real life use of a range of software packages, facilitating online and mobile information provision, knowledge generation and virtual interaction. It reports on their experiences of developing a purposively collaborative and interactive model of using blogs for reporting on, and interacting with, health informatics conferences.

Blogs and podcasts are among the many applications supporting forms of social networking collectively described under the umbrella of Web 2.0 (O'Reilly, 2005). The essential features of blogs and podcasts are briefly presented and examples of their use within formal educational contexts and the informal educational opportunities offered by conferences are also discussed.

The authors put into practice applications, and research their use within nursing informatics and education contexts (Murray, Maag, Øyri & Ward, 2006) as well as development of new collaborative models of providing virtual interaction with health

informatics events and opportunities for continuing professional development (Murray & Ward, 2004).

We report on the background, to the development of conference blogs; some issues of their use and levels of participation, and on some of the lessons learned how the authors are exploring the continuing development of this model for encouraging virtual conference participation.

As this approach is still in a preliminary stage, a secondary purpose of this paper is to encourage others in the health informatics community to explore this method.

The authors also wish to invite discussion of the development of this model of conference reporting and participation by these persons in the health informatics community, and on the wider potential use of Web 2.0 applications within health informatics.

### **Blogs and podcasts as Web 2.0 applications**

The exploration of new technologies that enable efficient and effective written communication and professional collaboration is critical in today's educational and clinical settings.

All health professionals should have at least a basic awareness of the importance of applying informatics to "communicate, manage knowledge, mitigate error, and support decision making using information technology" (IOM, 2003). Web 2.0 applications such as blogs and podcasts provide tools to support achieving these aims.

Web 2.0 websites are different from those of early web development, retroactively Labeled: Web 1.0, and designed to deliver interactive, versus static, applications to end-users (Daniel, 2006).

Their content is characterised by open communication, decentralised authority, and freedom to share and re-use materials across a more dynamic, interlinked and interactive World Wide Web; they are often referred to as 'read/write web applications.' (Gillmore, 2004). Among the technologies contributing to Web 2.0 are blogs (weblogs) (Perrone, 2004), wikis (Wikipedia, 2006), podcasts (Maag, 2006), RSS (Really Simple Syndication) feeds (Yensen, 2005) and other methods of providing many-to-many publication and communication. Social networking and social educational applications (Anderson, 2005), facilitating interaction and collaboration, are also central components of Web 2.0. Web 2.0 is viewed as 'all about people', with the precise technologies used to achieve this being of secondary consideration, and becoming increasingly transparent (Zambonini, 2005).

These collaborative and interactive aspects of the tools being explored are key elements in the authors' interests in their use and study.

The term weblog is believed to have originated in late 1997 (Kelly, 2005), with the shortened term, blog, appearing in 1999. Their use for facilitating the dissemination

of information and creating an arena for communications and social networking has grown rapidly since. Blogs are “a hierarchy of text, images, media objects and data, arranged chronologically, that can be viewed in an HTML browser” (Winer, 2003), and blogging is described as a form of reverse chronological public journaling providing a comment capability.

A blog is usually edited, organised and published via a Content Management System (CMS), many of which are built with Linux/Apache/MySQL/PHP (LAMP) architecture (Murray & Øyri, 2005). Applications such as *Blogger* ([www.blogger.com](http://www.blogger.com)) and *WordPress* ([www.wordpress.com](http://www.wordpress.com)) provide intuitive environments for creative construction of a blog.

An increasing number of applications are available to link or aggregate posts from different blogs having similar subjects, using either permalinks or tags, as for example the use of Technorati tags ([www.technorati.com](http://www.technorati.com)).

Accurate figures on the number of blogs currently in existence, and the different formats, are difficult to obtain. However, Technorati currently track over 50 million blog sites (Technorati, 2006). It is estimated there is a doubling of the number of blogs every 6 months – or two new blogs every second and about 1.6 million postings per day (Sifry, 2006).

However, it is also suggested only half are updated within the previous 3 months, while other estimates (Livejournal, 2005) are two thirds of blogs created ever, have any further updating, approximately 22% are described as 'active', under 10% are updated in the preceding 7 days, and only around 3% are updated on a daily basis. Blogs are accessed and maintained, by the primary bloggers, by readers, and by other contributors, via a standard web interface, using any web browser. Other methods of posting to blogs, such as via email or mobile (cell) phone messages are also emerging.

Setting up the infrastructure for blogs is nowadays simple, and the use of easily-customisable free/libre and open source software packages means a basic blog can be set up in a matter of minutes.

Depending on the degree of customisation, additional features (such as swickis, hit counters, aggregators, or text-to-speech conversion) and administration sets required, the workload for setting up and maintaining blogs can be as little as 3-4 hours over a 4-6 week period before, during and after a conference.

Most blogs facilitate RSS (Really Simple Syndication) feeds. RSS is a form of extensible markup language (XML) allowing for indexing and rapid retrieval by the user, of web content that changes frequently, such as posts to blogs (Yensen, 2005).

The use of RSS feeds, together with a feed reader (such as the Sage RSS reader plug-in for the Mozilla Firefox browser, or RSS subscription service in the Mozilla Thunderbird email client) allows the user to define content they wish to filter, from the plethora of material on the web, and have delivered to them as automatic updates.

Information delivery and personal expression is not limited to written text, but increasingly, via personal audio broadcasting, in forms that are easy to learn, create, and share online (Maagnursing, 2005).

Podcasting, a portmanteau of 'broadcasting' and 'iPod' (Apple Computer's MP3 player), is an Internet-based MP3 audio event, conversation, lecture, song, or speech distributed via RSS feed. The podcast may be heard from a computer's desktop (via most common audio software) or from a MP3 player via free podcatching software, such as Apple iTunes™ or iPodder.

The audio content may provide many creative opportunities for truly 'any time, any place' distance education. Enhanced podcasting, a relatively new addition to personal broadcasting, includes text, chapters, images and video. Software packages, such as Podcast Maker and Apple iLife06, are available for the user who wishes to create podcasts that also include images, animation and text.

### **The use and value of Web 2.0 tools in education and professional development**

Conferences provide an opportunity for both formal and informal professional development, social networking, and collaborative knowledge development. Web 2.0 tools, many of which are also often described as social networking software, afford connection and collaboration among individuals who wish to connect with one another.

Podcasting may be used to provide interviews, photographs and videos within or linked to a blog.

At the time of establishing our first conference blogs, in late 2004 for medinfo2004, we found few previous examples of blogging or providing online reports on health related or health informatics conferences, apart from the web-based reports of the authors (Ward, 2001). Similarly, Williams and Jacobs (2004) found little academic literature on the use of blogs within education, but substantial amounts of nonrefereed 'popular' material. Most bloggers it would seem, even within the academic domain, are more interested in exploring their practical use than in speculation and discussion of theoretical contexts.

Maag (2005) has explored the potential use of blogs within nurse education, and cites examples of small-scale evaluations within other educational contexts, for teaching and research purposes. Her conclusion is they can 'enhance health professionals' writing, communication, collaboration, reading, and information-gathering skills'. Other practical examples support the use of blogs within education (Martindale & Wiley, 2004; Godwin-Jones, 2003) for professional development, sharing information, interacting as part of a learning community and building an open knowledge base.

Within any novel developments, the question arises of why we are using them and whether they are effective instruments of enhanced learning. While theoretical analyses are at an early stage, the theoretical underpinnings supporting the use of these tools include Paivio's (1986) Mental Representations and Mayer's (2001) Multimedia Learning Theory.

The creation of enhanced podcasts taps into the learner's auditory and visual channels for dual coding, while by sharing the enhanced podcasts with others and having students develop their own, Siemens' (2005). Connectivism theory is being enacted. Boulos et al (2006) suggest the use of this type of 'mind tools' help to

defer powerful learning experiences and cite Wheeler et al (2005) in arguing deeper engagement with learning objects and online discussion yield significant benefits for the development of professional practice.

Users can be actively involved in the construction of knowledge and connection with peers in educational settings, both online and face-to-face. Instructors may interview colleagues about best practices in nursing education and easily turn the information around and share the expert opinions of others on the web for commentary feedback.

Presentations at professional meetings may be recorded and uploaded as podcasts for colleagues who were not able to travel and attend the conference. Attendees may be interviewed during a conference in order to provide feedback to the organizers of the meeting.

A body of literature is beginning to emerge on the potential use of blogs in education, with growing discussion in the nursing literature in particular, although much of that literature seems to simply explore the potential, rather than reporting examples of use. Farrell (2003) offers five major uses of blogs in education:

- To replace the standard class web page;
- To link Internet web links and other commentary to courses;
- To organise class discussions;
- To organise class seminars and provide summaries of readings; and
- Using blogs written by students as part of a portfolio-based assessment process.

Where the use of blogs within an educational context has been explored in reference to any theoretical context or underpinning, there seems to be currently little agreement on the most appropriate. Lave and Wenger's (1991) concept of 'legitimate peripheral participation' and Wenger's (1998) 'communities of practice' have been used frequently, with bloggers seen as 'knowledge brokers' (De Moor & Efimova, 2004).

### **Blogs for virtual conference participation**

The authors have described the development of an innovative approach to reporting on and encouraging virtual participation in health informatics conferences through the use of blogs (e.g. Murray & Ward, 2004; Murray, Øyri & Ward, 2005). The decision to use blogs for interactive conference reporting grew out of three inter-related issues; the authors' experience of providing web-based conference reports (Ward., 2001); a wish to explore the use of new technological possibilities to encourage virtual participation in such events; and a concern at the relative lack of use by health informatics organisations of the technologies they often advocate (eg, Øyri & Murray, 2005).

One author (Ward, 2001) has extensive experience, since 1996, of developing online reporting through WebPages to share both the content and context of conferences and similar events, including digital photographs, with those who have been unable to attend.

These reports have proved popular with several thousand hits on the web pages in the few days during and immediately after the events. Attempts have been made to involve others and gain their views on the event, even to the extent of carrying a laptop to conference dinners and taking it around the tables to get people to type their comments, which are then uploaded to the web each night. However, health informatics organisations have often provided poor role models for the use of web-based technologies.

Such tools could be used for providing information and for interacting with online communities comprising their members and wider interests. These online communities could then share resources or knowledge, develop tools to support interaction and dissemination, or seek to improve benefits to patients and improve health and healthcare.

The collaborative model being developed purposely differs from the common form of single-author blog or conference report. It provides an environment for the health informatics community to engage with formal and informal professional development activities previously only available to the limited numbers able to attend such events.

While the web-based conference reports and the blogs have, so far, had limited numbers of primary authors, the model being developed and explored is deliberately aimed at being collaborative and seeking to involve multiple contributors. This could be enhanced by the approach adopted at some conferences where personal digital assistants were provided to delegates to enhance communication amongst them and linked to the web for those unable to attend.

In addition, the growing availability of wireless Internet access, including at health informatics events, enhances the possibilities of appropriate comment on these events. Conference blogs can be mechanisms for providing information and for interacting with online communities comprising the members of the sponsoring health informatics organisations and wider constituencies of interest.

These online communities could then share resources or knowledge, develop tools to support interaction and dissemination, or seek to improve benefits to patients and improve health and healthcare. The approach has been developed for several international nursing informatics and health informatics events during 2004-06, and the basic model refined with the addition of other Web 2.0 tools to encourage interaction and participation.

An integration of a range of Web 2.0 applications, which provides a seamless combination of content from more than one source into an integrated experience, and referred to as a 'mashup' (Schofield, 2006) provides opportunities to expand the levels of interaction with educational and conference blogs, taking them beyond simple text-based reporting and comments. For many 2006 health informatics conferences, tools were incorporated providing automatic text-to-speech production of audio files for each blog post, which are then available as podcasts.

These developments will be evaluated and reported elsewhere, together with the use of other applications that can be added to blogs, so as to explore the potential for creating genuine, even if sometimes short-lived, communities of interest or

communities of practice around health informatics events.

### **Evaluating the use of blogs and success of the model**

The idea of 'if we make it, they will come flocking' is unauthentic, and a fair amount of effort is needed in publicising the existence of the blog, both in advance of and during the event. Even after the event, publicity can result in considerable hits on the site, as we found with the SINI2005 and SINI2006 blogs. The major time commitment comes during the health informatics event, when reports are being written and uploaded; and it is this that may be an obstacle that prevents active participation by more people.

Our experience is that, in order to be able to focus on reporting and commenting on activities within the events, one should not be too busy doing other things, such as presenting one's own papers, posters, etc.

The informal evaluation we have undertaken so far, reveals while many people are happy to read the blogs, find them valuable in terms of information provision, and think they are a good idea to be pursued and developed further; few actually contribute their own thoughts.

We have found most of the contributors were people who are used to writing in other forms, often produced conference reports, and are relatively experienced in the health informatics field. Some informal feedback suggests those who are not experienced in 'exposing their thoughts in public' may be more reluctant to contribute.

At many recent events, wireless Internet access is available and so there were few logistical reasons why anyone who had their laptop with them could not contribute. This kind of access allows notes to be written and uploaded, and so ready to read online, within seconds of the activities reported. Digital photos may also be rapidly made available online.

However, not everyone carries a camera, laptop and wireless card around these events, and Internet access by other means (eg cybercafes) may not be readily available when people think they might wish to write something. Therefore, lack of easy physical access, even when wireless facilities are available, may be an obstruction to contributing.

Usage of the blogs was monitored with the statistics software built into the blogging software and the use of the Nedstat website analysis package. The majority of the posts made to the blog, before during and after the event were from the authors. Despite our attempts to encourage participation by others, including those people who had signed up to be bloggers, and our desire to encourage a collaborative, as opposed to individual, model of reporting, few other people contributed either substantive posts or comments on existing posts.

Although only limited responses were received, they did identify some of the barriers to using blogs to participate in this sort of event. Those who were present found both access issues and the variety of activities limiting their time available meant they did not read or contribute to the blog as much as they would have liked. Those who were not present required reminders that the service was available and



were not sure what they would get out of the time and effort put into reading the blog.

## **Reflections and recommendations on conference blogs**

Internet technologies and new opportunities for developing online collaboration and social and professional networking are developing at an impressive rate.

It is important to attempt not just to implement some of the new technologies, but also to evaluate their usefulness in different settings. The authors have learnt many useful lessons during this first wave of conference blog implementations, which will be useful in future development work, and would suggest three key points for others who may be considering similar activities.

The first is about the selection of appropriate software. It should make providing contributions to a blog as easy and quick as possible, as potential users, particularly those physically attending the event, may have limited time and access.

The second recommendation is also related to the selection of software, such that blog providers should develop appropriate mechanisms to reduce the amount of spam, which can be received as comments to posts, while at the same time not restricting the wide range of discussion, which is relevant to the event.

The third lesson is about the importance of informing potential participants well in advance of the event about the presence and potential of the blog, and providing them with reminders during and after the conference, to increase the likelihood of active participation.

According to students' feedback (Maag, 2006), Web 2.0 social networking tools are enjoyable to use, accessible for the majority of learners, and dovetail with novel pedagogical theories. Early, as yet unpublished, evaluation of the use of conference blogs shows benefits to users. Some of the challenges faced when considering the use of these leading edge tools are bridging the digital divide, effectiveness as a learning modality, meeting the needs of all learners and users, quality versus quantity, and faculty buy-in for these new teaching and collaborative tools.

There is a need for more empirical studies to be held in order to determine the effectiveness of these applications and a willing openness to consider and learn about other emerging technological tools holding great potential for educational, professional, and collaborative purposes.

According to the 2006 Horizon Report, technological learning tools will emerge as powerful learning applications such as cell phones, educational gaming, augmented reality and enhanced visualizations, and context-aware environments and devices.

It is truly a wonderful era for healthcare educators, collaborators, and professionals to adopt technological tools that may be applied to learning, teaching, and artistic expression. We may also be on the verge of a new series of approaches to addressing some of the thornier problems of health informatics, and the development of 'Health Informatics 2.0'.

## **Conclusion**

While the authors and colleagues have provided other blogs of health informatics events based in this collaborative model (eg of the University of Maryland School of Nursing's Summer Institute in Nursing Informatics – SINI2005 and 2006 – and of the MIE2005 and 2006 conferences organised by the European Federation for Medical Informatics (EFMI)), and there have been a few other individual conference reports and comments on individual blogs, we have found no other reports of collaborative blogs organised by, or on behalf of, health informatics conferences.

We believe there is a future for using blogs (and other forms of interactive online document development, such as wikis) for providing reports on health informatics events, and for encouraging forms of virtual participation. At present, there are several hurdles to overcome – or perhaps, rather, a need for education to show how easily the hurdles can be overcome – before more than a small number of enthusiasts actively participate.

The growing number of attempts to use innovative web based technologies to enable a different form of participation in health informatics conferences and events suggests that there may be potential growth in this area. The emerging models of social and professional interaction via web technologies suggest both practical and personal factors are likely to influence the use of these technologies. The software needs to be easy to use and accessible to various mobile technologies and users will need a level of familiarity to encourage exploit. The personal factors may include particular personality types and ingrained cultural norms which although changing still inhibit many people from the forms of non verbal and asynchronous interaction considered in this paper.

While readership of our blogs has been good, the low level of active participation through contribution of materials suggests ways of encouraging conference attendees and blog readers to be active participants, as opposed to passive consumers, is an area also meriting further study.

The rapid growth of blogs as documented by Sifry (2006) and others tends to support Kelly's (2005) view we are moving towards an era of web use based in 'participation, not mere consumption.

Our communication infrastructure has taken only the first steps in this great shift from audience to participants, but that is where it will go in the next decade'.

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