The current craze: web 2.0 tools

(Key words: web 2.0 tools, wikis, podcasts, blogs)

The electronic super-highway or the Internet *alias* World Wide Web has been an indispensable tool to its many users. It has speeded up communications to an unbelievable degree and has been such a boon to information seekers. It has developed in leaps and bounds and is advancing at a tremendous pace.

Recent years have witnessed a growing interest in the latest generation of Web-based collaboration ware, also known as Web 2.0 tools, namely wikis, podcasts and blogs, as evidenced by the growing number of publications on the subject and the many examples of online health-related professional and educational services that have adopted the use of these tools. Wikis, podcasts (and its video incarnation, the vodcast) and blogs/photoblogs carry the potential of complementing, improving and adding new collaborative dimensions to the many Web-based medical health education tools, continuing professional development (CPD) and research services currently in existence.

A wiki (from the Hawaiian *wiki*, to hurry, swift) is a collaborative web site whose content can be edited by anyone who has access to it[1]. Perhaps the best example of a wiki in action today is 'Wikipedia – The Free Encyclopedia'[2]. Wikis, and in particular Wikipedia, represent a promising principle that can significantly transform the Internet information age. Wikis can be used as a source for obtaining information and knowledge, and also as a method of virtual collaboration, e.g., to share dialogue and information among participants in group projects. In addition, they allow learners to engage in learning with each other, using wikis as a collaborative environment to construct their knowledge or to be part of a virtual community of practice. Medical and health-related wiki examples include the Flu Wiki, which is intended to help local public health communities prepare for, and perhaps cope with, a possible avian influenza pandemic. Wiki features include easy editing, versioning capabilities, and article discussions.

The essence of Podcasting is about creating content (audio or video – vodcasts) for an audience that wants to listen and watch when they want, where they want, and how they want. Users can listen to podcasts and watch vodcasts on their computer (e.g. using Windows Media Player), or download to portable MP3/MP4 players and listen or watch on the move and anywhere. This is perfect for the busy health professional. Podcasts are already being used in medical school curricula[3]. Podcasts can be created from written text using text-to-speech synthesizer software, but better podcasts featuring real human voice and radio-style programmes are also available. Podcasts use Really Simple Syndication (RSS), which is now natively supported by, and built into, the latest Windows Internet Explorer 7 (IE7). Users do not need a dedicated 'podcatcher program' if they are running IE7 or Windows Vista. A popular web browser, Mozilla Firefox, a popular free and open web browser, also supports RSS through its "live bookmarks".

The latest addition to the many inclusions of this collective masterpiece of Web 2.0 tools is the quaintly called "Blog". The term was coined by Jorn Barger in 1997 and defined as *"A Web page where a Web logger 'logs' all the other pages she finds interesting"*[4]. The word 'blog' is a contraction of 'Web Log' which implies an online web journal that can offer a resource rich multimedia environment. It is generally a web site that contains dated entries in reverse chronological order (most recent first) about a particular topic. Functioning as an online journal, blogs can be written by one person or a group of contributors. Entries contain commentary and links to other sites, and images as well as a search facility may also be included. Because blogs engage people in knowledge sharing, reflection and debate, they often attract a large and dedicated readership[6]. They can also prompt the drawing together of small virtual groupings of individuals interested in co-constructing knowledge around a common topic within a community of practice. Standard blog features include easy posting, archives of previous posts and a standalone web page for each posting to the blog with a unique Universal Resource Locator (URL). The latter feature facilitates linking to and organising content within the same blog and from external sites. Posting a clinical photo from a digital camera directly to a blog after optimisation and adding of a blogger's

comments can also be made at the touch of a button using, for example, a free Google product called Picasa. Moreover, the currently available 3G generation of mobile phones equipped with 2+ megapixel cameras can instantly post high resolution clinical photos to photoblogs/moblogs (mobile blogs) to a potentially world wide audience on the Web.

The notion of 'anytime, anyplace' learning has been difficult to achieve but, recently, the advent of cheaper, better supported mobile, personal technology is making mobile learning (or m-Learning) more achievable and more ubiquitous (u-learning) than ever before. Students are now more mobile than ever, and often find themselves multi-tasking, working in part-time jobs, or located some distance from a parent institution on professional practice placement. A similar situation is faced by clinicians in remote and rural areas, who often lack training and proper academic support because of their geographic isolation from the large central hospitals and academic centres of excellence in the main cities. In such situations, students can feel pressurised, unsupported and socially isolated from tutors and peers[7] and may even become discouraged and drop out from the course. Professionally isolated clinicians may also lag behind in their CPD. In this context, quality learner support is vital and social presence becomes a highly desirable feature to embed within the delivery of any learning product. Furthermore, previous studies into the impacts of e-learning have highlighted a number of quality concerns prompting calls for improved delivery to learners in terms of cost benefits and better learning outcomes. The uses of such technologies to encourage learners' deeper engagement with learning materials and the affordance of shared working spaces to improve collaboration between learners are desirable outcomes. However, as research has already shown, technology is neutral until it delivers content and will lose its effectiveness if it is not applied in a planned and systematic manner. It will, therefore, be important to effectively demonstrate how tutors successfully deploy such technologies in live learning contexts and how dynamic content can be developed, edited, reused, and negotiated within a virtual community of professional practice. It may also be necessary to re-educate learners regarding their participation within such a dynamic learning environment as old models of education have left their undeniable legacy. Many students have been so busy memorising what teachers tell them they may need some support when they first attempt to communicate with others using collaborative technologies.

Perhaps the two main advantages of wikis, podcasts and blogs are their ease of use and the availability of many open source or free or low-cost software and hosting options to run them. All of them use RSS, which means users can easily set up or subscribe to 'feeds' so that they could automatically receive content updates from their favourite services. Podcasts also have the potential of offering superior support for auditory learners (it is claimed that the primary learning style in at least 30% of learners is auditory) and also for visual learners in case of vodcasts. However, audio and video files can be large in size and users must have sufficient band-width to download them.

Wikis and blogs, because of their free form nature and the relative or potential lack of control over their content, are sometimes prone to vandalism and as a result, may lead to serious quality issues[8]. Furthermore, in such an open and collaborative web environment, anyone can very easily post copyrighted material without the permission of copyright holders. Vandals could also post otherwise unsuitable or misleading content, edit existing content in a way that reduces its quality or accuracy, or even delete or blank a good wiki entry.

There is also the problem of protecting patient anonymity when clinical data and images are posted on the Web. However, most good wiki software includes a restoration or rollback function which allows the Administrator or Editor to revert a page back to its latest non-vandalised version. Copyrighted or patient material posted without permission can be edited out, when brought to the editors' attention.

The lack of vital article meta-information is another potentially serious issue. Often enough, Wikis are authored by communities and not individuals (open editing/distributed page authorship and ownership), and thus discourage the feeling of authorship. It is usually impossible to properly identity contributors to a wiki entry since wiki authors are typically anonymous unless the group of contributors is extremely limited and or authorial identification is enforced. However, this latter option might deplete a wiki of one of its most important ingredients of strength. All what one usually finds in wikis are IP addresses and nick-names of authors and editors. The lack of clear and complete authorship or editorship information attached to each wiki entry, including affiliations and credentials, is a very serious quality issue encountered in most wiki-based encyclopaedias these days. Wiki author anonymity also poses enormous questions for higher education institutions where assessment and grading are still typically based

on individual efforts. On the other hand, it is this very openness of wikis that gives rise to the concept of "Darwikinism", which is a concept that describes the "socially Darwinian process" that wiki pages are subject to. Basically, because of the openness and rapidity with which wiki pages can be edited, the pages undergo an evolutionary selection process not unlike that which nature subjects living organisms to.

"Unfit" sentences and sections are ruthlessly culled, edited and replaced if they are not considered "fit", which hopefully results in the evolution of a higher quality and more relevant page. Whilst such openness may invite "vandalism" and the posting of untrue information, this same openness also makes it possible to rapidly correct or restore a "quality" wiki page. In fact, a recent review of Wikipedia vis-á-vis the online Encyclopaedia Britannica showed that similar amounts of errors were found in both online encyclopaedias, indicating that the quality of articles in Wikipedia approached that of the Encyclopaedia Britannica.

Clearly then, these Web 2.0 applications are here to stay and can be of great use in the higher education, CPD, and patient education settings[8]. However, new technologies are particularly vulnerable to criticism as they can be costly to deploy or employ (not just the software cost), time consuming to learn to use (e.g., for tutors to develop pedagogically sound 'use scenarios' and activities that make use of the new technologies), and may initially demonstrate little pertinence for teaching and learning. Emerging technologies such as those introduced in this article should therefore be systematically evaluated to ascertain their benefits and limitations in a number of learning contexts and to determine and document their proper use for higher education, CPD of healthcare professionals and patient education.

Undergraduate and postgraduate students, clinicians in practice, and members of the general public or patients are in many ways different audiences with different learning needs. However, there are also many areas of overlap and potentials for useful online collaboration between these groups. There might be some room for compiling some shared-audience educational content sets using Web 2.0 tools, and, in doing so, maximising the efficiencies of content authoring and delivery thereby promoting fruitful collaboration between students, clinicians and patients. However, in order to achieve this, research is needed to sort out which factors (in relation to content, presentation form and audience) make the intersection between the different audience domains grow big or small and into the different possibilities or scenarios for collaboration between these audiences. Research into the use and evaluation of Web 2.0 tools in medical/health education is still in its infancy and the current pedagogic evidence base about these tools in this context is seriously lacking. Research

into analysing the uses, benefits and limitations of Web 2.0 learning solutions should therefore be a priority for universities that adopt such technologies. User perspectives of both student and tutor can proffer different, yet complementary, vital insights into the effectiveness of learning technologies within variable contexts and should therefore be adequately covered in any pedagogic research into Web 2.0 tools.

Studies could also investigate the cross-operability and integration (confluence) of the three emerging Web 2.0 applications, wikis, podcasts and blogs, and their respective and synergistic contributions toward the enhancement of student learning. Building on these studies, researchers could establish key activities that can be evidenced to enhance student learning experiences and deepen levels of student engagement within digital learning environments.

References

1. Wiki: Definition. Available from http://www.answers.com/topic/wiki

2. Wikipedia. Available from http://wikipedia.org/

3. Harvard Medical School – WebWeekly. Available from http://webweekly.hms.harvard.edu/archive/2006/0130/student_scene.html

4. Blood, R. How Blogging Software reshapes the online community. *Communications of the ACM* 2004; **47**: 53-5

5. Blog:Definition. Available from http://www.answers.com/topic/blog

6. Seven things you should know about... Blogs. Available from http://www.educause.edu/ir/library/pdf/ELI7006.pdf

7. Wheeler S. Student Perceptions of Learning Support in Distance Education. *Quarterly Review of Distance Education* 2002; **3**(4): 419-30.

8. Boulos MNK, Maramba I, Wheeler S. Wikis, blogs and podcasts: a new generation of Web-based tools for virtual collaborative clinical practice and education. *BMC Medical Education* 2006;**6**:41

B J C Perera
Joint Editor