Social Web Evolution:
Integrating Semantic Applications and Web 2.0 Technologies

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Chapter X
Application of Web 2.0 Technology for Clinical Training

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ABSTRACT

In clinical training, students plan, implement and evaluate their learning activities by themselves. They apply theories and concepts in a real clinical environment and learn through social interaction and reflective thinking to experience, conceptualize, apply and create new knowledge to solve clinical problems. Since students are sent to different clinical locations for training and are mentored on a one-to-one basis, it is difficult for students to share their knowledge, make enquiries or interact with their peers and mentors for social and reflective learning. Web 2.0 provides a collaborative and social interactive platform that allows learners to exchange, share, acquire, codify, distribute, and disseminate knowledge. Its functions and features are able to construct a virtual and distributed environment for learners to gather, filter and update the knowledge over different Internet sources. This chapter thus aims to discuss the functions and features of Web 2.0 technology and its applications to clinical training.

CLINICAL TRAINING IN NURSE EDUCATION

Clinical training and hospital attachment are the areas of thematic learning in nursing education. It is normal practice for nursing institutes to send their final year students to placements for clinical training. Each student is attached to one clinician to learn and practice their clinical skills in a real environment. Students are required to plan, implement, and evaluate their own learning activities by themselves (Dornan et al., 2005).

Students are asked to take notes and share their clinical experience (Iyamu et al., 2007) with mentors and peers in the placement. Through such social and reflective learning, knowledge on clinical operations can be shared, exchanged and collaborated (Meskó et al., 2007), stimulating students' to think and create new knowledge (Dornan et al., 2005; O'Neill et al., 2002). More importantly, students are trained in the ability to integrate their knowledge and skills in their workplaces thereby approaching clinical operations with increased confidence.

Web 2.0 is a people-based knowledge management tool that supports knowledge collaboration, exchange, sharing, and creation. It provides the platform and tools, such as blogs, wikis, podcasts, social bookmarks, really simple syndication (RSS), tags and social network software, for learners to interact and communicate in a virtual and distributed environment (Santoro, 2007; Lee, Tsui and Garner, 2008; Gooding, 2008). Following the rapid growth of the usage of Web 2.0 in e-learning (Santoro, 2007), this paper investigates how Web 2.0 can be applied for clinical training in nurse education and what issues to be considered in developing a Web 2.0 platform for clinical knowledge sharing.

WEB 2.0 TECHOLOGY DEVELOPMENT

Web 2.0 technologies include blog, wiki, podcast, social bookmark, tags, really simple syndication and social network software and has the features of social interaction and collaboration to facilitate knowledge sharing and exchange over internet platform (Lau et al., 2009). It allows community to publish and share content by themselves and to edit content collaboratively and interactively. Through such social interaction and collective intelligence, knowledge is created, exchanged, shared and created.

Blog

A blog is a user-friendly content management tool that allows users (bloggers) to publish their own content on the web (Santoro, 2007; Gooding, 2008; Kamel et al., 2007; Boulos et al., 2006; McGee et al., 2008; McLean et al., 2007). A blogger shares his writings (blog) with other bloggers who are in the community or the general public. Other bloggers write comments or share their feelings and opinions about the posted blog, or link it to other blogs. Through such blogs' linking and sharing, communities with the same interest and discussion topics are formed. Bloggers share, exchange, distribute and disseminate their knowledge and experience through such social interaction and communication. In clinical placements, students are allocated to different clinics for placement. They take notes and share their clinical experiences with their mentor and peers. Blogs overcome the geographical problems and help students to post and share their clinical experience with peers or mentors in other locations, connecting them in a virtual social environment that results in clinical knowledge sharing, exchange, distribution and dissemination, and facilitates learning through social interaction and reflective thinking. By analyzing blogs' linking, students with similar study topics are linked and clustered together to form an expert locator, topic directory or community. This helps learners to navigate the required clinical knowledge more easily, and to locate experts or peers with similar clinical experience for knowledge acquisition. Thus, blogs can be used as discussion forum, expert locator, topic directory or case repository for social and reflective learning in clinical training.

Wiki

A wiki is a collaborative editing tool that allows authors to co-edit a document (O'Neill et al., 2002; Gooding, 2008; Kamel et al., 2007; Boulos et al., 2006; McLean et al., 2007). It provides the func-

tions/features of content management, versioning control, right management, etc. Authors collaboratively edit a single document. They review, add comments and revise the content. Through such collective intelligence and collaboration, knowledge is created. Each student is attached to one clinician for training. Students are sent to different clinics and supervised by different mentors, but they may handle similar clinical cases in their placements. Wikis allow students to share their clinical experience and work collaboratively to edit, among other, similar clinical cases. Through such collaboration and collective intelligence, students can create knowledge for problem solving. Most importantly, all the similar clinical cases can be grouped into certain topics for sharing. Thus, a wiki can be used as a collaborative platform for groupwork and to build a knowledge repository for social learning.

Podcast

A podcast is a series of audio or video digital-media files for playback on portable media players and computers (Santoro, 2007; Kamel et al., 2007; Sandars et al., 2007). It can be syndicated, subscribed to and downloaded automatically when the content is updated. Podcasters distribute and disseminate the digital-media files over the internet and subscribers obtain the podcasts via a simple syndication feed reader in real time. Thus, students can capture clinical skills and techniques in image, audio or video files during clinical training, and distribute and disseminate these podcasts via RSS feed reader to their peers or mentors. Their peers and mentors can view the podcasts through their ipods or computers at anytime and anywhere. Thus, podcasts can be used as digital-media teaching material and facilitating knowledge distribution, dissemination and acquisition for clinical training.

Social Bookmark

A social bookmark is a method for internet users to store, organize, search and manage webpage bookmarks (Gooding, 2008; Yang et al., 2008). Social bookmark software allows users to input tags (i.e. keywords or terms) informally and personally to describe the webpages, and share the tagged bookmarks with others. By relating the tags of the bookmarked pages, bookmarks can be linked and clustered into different topics. Students in clinical placements already share their blogs, podcasts and clinical websites with their peers or mentors, and social bookmarks further allow them to add bookmarks and tags to these internet sources. By classifying and relating the bookmarks into different categories collaboratively, students can more easily search for the required knowledge on a certain topic from the social bookmark websites. Thus, the social bookmark is a knowledge collaboration and sharing method for bookmarking. It is used as a community-based bookmarking tool for learning resources indexing, which shortens students' searching time.

Tags

Tags are the keywords or terms for describing digital media content such as social bookmarks, audio clips, video clips, blogs, wikis, websites, etc. Tags are built by a community and are used to describe its content. The tag cloud function collects and counts the number of tags used by a community, and groups and classifies them into different topics that enable a search engine to search more accurately (Connor, 2008). Students can add tags to their podcast, blog, wiki or social bookmarks content and share the tags with their peers or mentors for tagging or content searching. The more accurate search results from such tagging of knowledge collaboration and sharing help students acquire the required knowledge more

effectively and efficiently. Tags can therefore be used as community-based taxonomy to describe the learning content of podcasts, blogs, wikis, social bookmarks or clinical websites.

Really Simple Syndication

Really Simple Syndication (RSS) is a feed reader for content distribution, dissemination and acquisition (McLean et al., 2007) over internet sources such as blogs, wikis, podcasts, social bookmarks or websites. When the source content is updated, the RSS feed reader authomatically sends an alert signal and pushes the updated content to RSS subscribers so that RSS subscribers gather the most updated information in real time. By adding the RSS to clinical internet sources, knowledge can be distributed and disseminated to students efficiently. Students can subscribe to an RSS feed reader and gain clinical experience from clinical cases and discussions via blogs, wikis, social bookmarks or other websites automatically. In other words, an RSS feed reader can be used as a learning content updater in clinical training, speeding up the knowledge dissemination and distribution processes and students' knowledge acquistion processes.

Social Network Software

Lastly, social network software provides social networking functions such as audio/video conferencing, IP telephony, desktop sharing, chat rooms, whiteboards, etc., for a community to communicate and interact in a virtual environment (Bonniface et al., 2007). It provides community-building functions such as an electronic portfolio, resume builder, and social networking, so that people can be connected together to form online communities to exchange and share knowledge (Rapoza, 2008). In clinical training, social network software allows students to create communities, connect with people, spread ideas, and share knowledge in a virtual community environment that facilitates social learning among students and overcomes geographical barriers for knowledge sharing and exchange. Thus, social network software can be used as a platform to build a community for social learning. Students can exchange, share and create knowledge through such social interaction and communication.

In summary, Web 2.0 provides the features of collaborative work, social networking, community, and self-management. By using Web 2.0 tools, students can build communities and learn through knowledge collaboration, exchange and sharing. Web 2.0 provides a networked environment for learners to interact with each other in a single place and to create new knowledge through social interaction and reflective thinking. Web 2.0 links up internet learning sources in a virtual and distributed environment that facilitates knowledge dissemination and distribution over the Internet. Learners can plan and implement their own learning activities with Web 2.0 applications and evaluate their learning outcomes by themselves. In other words, Web 2.0 technology links people and internet learning sources and builds communities. It overcomes some of the geographical and one-to-one mentoring problems for social and reflective learning.

ISSUES CONCERNING THE USE OF A WEB 2.0 PLATFORM FOR CLINICAL KNOWLEDGE SHARING

In summary, Web 2.0 provides the functions and features for knowledge collaboration, exchange, sharing and creation. It can be applied to clinical training for improving clinical knowledge through social and reflective learning. Thus, in order to implement a usable clinical training Web 2.0 platform, other issues such as interface design, learning content, patient privacy, perceptions of knowledge-sharing behavior of nurse, factors

for increasing the likelihood of nurse on using web-based platform, and organizational culture are required to be studied.

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