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YouTube and Other Web 2.0 Applications for Nursing Education

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ABSTRACT

Web 2.0 applications, such as the popular YouTube™ online video network, may enhance health care students' learning and retention while providing connections with peers and faculty. Today's students are consumers of popular social networking tools, such as “Facebook” and “MySpace,” as well as the personal video sharing site, YouTube™. Furthermore, novel cellular phones, such as Apple Computer's© iPhone and the innovative Palm phone, have the capacity to show YouTube videos, which are now literally a “touch” away from viewing. The authors set out to explain Web 2.0 applications and the impact on health care students' education, social networking, collaboration, needs, and wants in today's busy learning and working environments.

Keywords: nursing, education; technology; web2.0; collaboration; pedagogy, theories.





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Today's health care students are creative, innovative, and think "Entirenet" (Internet) when preparing written, clinical, and classroom assignments. Many students text message their college registrations, instructors, and look for institutions of higher learning providing convenience, flexibility, and choice in technology. Health care educators are in a prime position to learn from sophisticated tech savvy Millennial/Gen Y students about social networking tools holding potential learning opportunities. Of equal importance, twenty-five percent of the current health care workforce is between 20- to 27-years old (Thor, 2007). Consider this, a small group of third-year medical-surgical nursing students ready a group presentation on a critical care nursing skill integrating a YouTube™ video, downloaded from the Internet, for a peer audience. This demonstrates creativity and a desire to provide multimedia to enhance learning and ensure communication in the classroom setting. During the same semester, a University librarian sends a general email to the nursing faculty, which includes a link to a student project, "Nursing BACK," a colorful hip-hop dance portraying nursing today and advertising its array of professional opportunities (YouTube™, 2007a). These scenarios sparked a curiosity about YouTube™, an example of a Web 2.0 (or Health 2.0) application, and how it might be an inexpensive, easy-to-use, and innovative tool for health care educators,





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nurses, physicians, and students to use while preparing educational materials for many audiences.

Furthermore, students' use of this popular Web-based phenomenon provides evidence of advanced information technology utilization to effectively communicate, manage information, and collaborate with peers. Therefore, students are demonstrating proficiency in the use of technology; an informatics competency dream comes true! Web 2.0 applications, increasingly popular social networking, educational, and research tools, also have potential implications for health and biomedical informatics (Sarassohn-Kahn, 2007).

Background of Web 2.0 Applications

According to Wikipedia (2007a), Web 2.0 is “a second phase of development of the World Wide Web including its architecture and its applications” (p.1). Blogs, podcasts, wikis, social networks, and search engines are examples of Web 2.0 applications. Proponents of these applications note these tools may enhance health professionals' proficiency in basic information technology and hence improve communication, information management, and collaboration with peers (Murray & Maag, 2006; Erdley, Murray, Ward, Perry, Hansen & Oyri, 2007).

Sarasohn-Kahn (2007) postulates “Health 2.0” (based on Web 2.0 applications) is a “verb” not a “noun”. This “verb” designation of Health 2.0 is because health care consumers, turning to these applications, increasingly are creating communities supporting health information quests as well as





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offering personal health expertise to others around the globe. Of particular interest, patients are now referencing Facebook to evaluate physicians' behaviors as decision-making aids about physician selection (personal communication, Bertalan Mesko, September 4, 2008). Even Web 3.0 applications, such as three-dimensional (3-D) environments promoting interactivity with content and building users' experiences, are interactive tools for families to cultivate online "gardens" representing "healing communities" (Sarasohn-Kahn).

O'Reilly (2005) states Web 2.0 is a second generation web-based "platform," from which interactive open-source software (OSS) programs such as weblogs (blogs) (Perrone, 2004), wikis (Wikipedia, 2007b), podcasts (Maag, 2006), Really Simple Syndication (RSS) feeds (Yensen, 2005), YouTube (Skiba, 2007) and Google Docs, Spreadsheets and Presentations, Social Networking (Google, 2008; Michael, 2007), and Second Life (Oishi, 2007) stem providing interaction, collaboration, and problem-solving skills for students in an Internet-rich world. An example of a sophisticated Web 2.0 application promoting critical thinking is the Visual Medical Dictionary (2008), which provides "an ontology context tree (MeSH-based) and interactive network graph of related drugs, diseases and therapies" (p.1).

These tools have the potential to revolutionize health care education because of the ability to "reach" many individuals at a distance. Malan's (2007) work demonstrates how podcasting a





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computer science course reached 10,000 subscribers from over 50 countries thereby providing an “educational reach” versus improving education methodology. The ability to “push” educational content via RSS to a mobile device, such as a MP3 player or telephone, for review and repetition (Jelesiewicz, 2007) of educational material may break down existing physical walls of higher education. Furthermore, quick and timely access to information via Web-based communication and collaboration tools may lead to robust brainstorming sessions across datelines, thereby enhancing collegiality and build life-long social networks.

The Web 2.0 map offers a visual of a multitude of online applications to educators able to stimulate active learning and problem solving in an increasingly fast-paced and complex world (Wikimedia, 2007). Video and videocasting are two words illustrated in the Web 2.0 map. The term “YouTube” might be added, too, since it is becoming a widely used application in college education. Nurse educators are perusing YouTube online videos to replace outdated audiovisual material in skills labs, and regularly present short accurate YouTube videos pertaining to nursing skills during lectures. This provides instant visualization of an abstract skill, which a novice learner may not understand without a visual image. Moreover, evolving Web3-D platforms such as “Play 2 Train” (Ramloll, 2007) and “Second Health” (Linden, 2008) are immersive playgrounds educators may choose to offer individuals assisting with role-playing and problem solving prior to actual patient contact. According to Oishi (2007) 80% of Internet users will be participating in web3-D online environments by 2011.





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YouTube

YouTube, an online video broadcast establishment, was created in February 2005 by Chad Hurley, Steve Chen, and Jawed Karim (YouTube, 2007b). It was showcased in December 2005. Currently the company boasts 20 million “unique” users (over the month of June 2007) and shows 60% of existing online videos (Cashmore, 2007). This online social network allows users to upload, share, and view a wide variety of video clips across the Internet. Individuals may access the videos via blogs, mobile devices, email clients, and websites.

YouToo: A “Primer”

YouTube provides an informative help section on the site (YouTube Help Center, 2007c). The website (www.youtube.com) shows the help option at the top right of the main screen. Clicking on this reveals a nicely structured help section. The various options range from a basic glossary of terms to making one’s very own video clip. Included in this section are directions on how to upload a video and then view the video clip. These help section also presents topics ranging from simple to advanced topics (making videos available for mobile devices to remixing to dealing with RSS feeds of videos). Also there is included a very nice trouble-shooting section. Each of these respective sections provides information in easy-to-understand terms. What is more interesting is the wide-assortment of help videos also contained in this section. There is an option, too, to subscribe to these help videos, a very nice feature for those continually challenged by this technology.





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One Google alternative is titled "Picassa" focusing on still images not video clips. There is an option, though, to include video clips (wmv, .mp3 and QT files). The other and more competitive application to YouTube is Google Video. However, while YouTube has a well-documented 'Help Section', such a center is not present in Google Video. On the upside, one is not really needed with Google Video. Clicking on the link to upload videos provides all the instructions needed to post video clips (http://video.google.com/videouploadform?utm_campaign=gv-wwhdr&utm_source=EM&utm_medium=link&hl=en). Another stellar example of the use of online video in professional arenas is the exemplar, "SciVee," created by Philip Bourne at the University of San Diego, California, School of Pharmacology (Timmer, 2007). SciVee was developed to bridge the gap between reading scientific abstracts and a complete paper using an online "pubcast" (a short video produced and released by a researcher/author that is synchronized with a peer-reviewed publication). For example, "Ten Simple Rules for Getting Grants," is a pubcast listed as one of the most viewed videos at the site. Other scientific videos, not connected with a peer-reviewed journal article, are offered and may address topics such as "Microbiology" or "Transgenic Mice, Part 1, 2, 3." SciVee is dubbed "YouTube for scientists" (Taco, 2007) and the author hopes an audiovisual presentation of a paper will make it easier for the consumer to understand the content of the journal article. Bourne created this online site in an attempt to decrease information overload many scientists report because





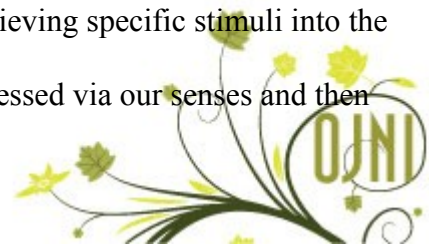
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there are as many as 16,000 publications reported per week in PubMed (Timmer). The authors of the site offer easy-to-understand tutorials on how to create and publish online videos. All you need is a WebCam and a video recording software program, such as Apple Computer's "iMovie" or "Movie Maker" by Microsoft©. After the video is uploaded at the website a user accesses the pubcast. The program synchronizes the researcher's paper (text format) with the information provided via the audiovisual. The uniqueness of SciVee is its use by graduate students wishing to share their initial research work with the entire academic community. More senior researchers may go online and publicize their current work and results via an online video. Timmer (2007) reports high-school students working at the University of California San Diego composing and producing video presentations. SciVee hosts the videos to encourage youth to disseminate their novel ideas and anyone who wishes to join a community of scholars.

Learning Theories Supporting Educational Multimedia

Paivio (1986) explains the importance of “dual cognitive coding” for effective learning to occur. Video productions tap the learner’s auditory and visual channels in the brain and thereby enhances students’ learning effectiveness. According to Paivio there are two independent but interconnected coding systems in the brain, verbal and nonverbal, that underpin human learning. The two systems are responsible for coding, organizing, storing, and retrieving specific stimuli into the human brain. Paivio hypothesizes verbal and visual stimuli are processed via our senses and then



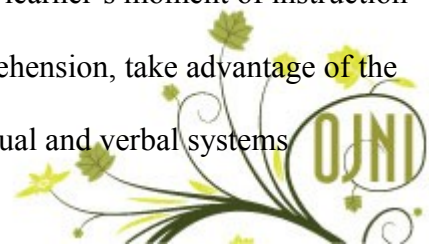


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encoded by the verbal and visual systems. Within the visual system both images and text are recognized and encoded by the brain, whereas the verbal system codes primarily auditory stimuli. Furthermore, both representational and referential connections are then communicated between the two systems with an outcome of storage of information in long-term memory and/or retrieval of information from short-term memory (Prion, 2008). The end result is the learner's ability to recall information and do something with it as a result of the dual coding process.

Mayer's (2001) model of multimedia learning dovetails Paivio's hypothesis of dual coding and acknowledges there is an audio and visual method of allowing information to be coded and processed. However, Mayer goes a step further and states three assumptions associated with learning from multimedia instruction: dual channeling, limited brain capacity, and active processing. In addition, Mayer addresses "working" or short-term memory as the place where learners process and store information for easy retrieval. However, Mayer states if the human working memory is overloaded, also known as "cognitive overload," with information the information will not be allowed to enter long-term memory for later retrieval. Furthermore, the information, which is let into long-term memory, will be confusing for the student. Therefore, if a student experiences cognitive overload there will be decreased learning. It is important for nurse educators to understand visuals and text are both processed via the visual system and, therefore not overload the learner's moment of instruction with too many visuals and text. In order to enhance students' comprehension, take advantage of the dual coding tenet and provide access to information that taps the visual and verbal systems





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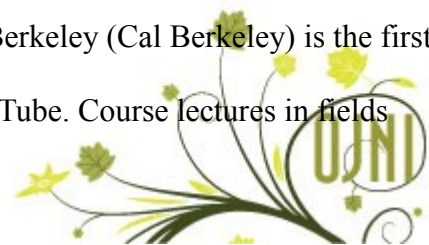
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simultaneously. For example, this may be accomplished by providing an audio explanation of a complex visual diagram instead of expecting a learner to read between text and a nearby printed diagram. Hence, when creating video files these concepts may be applied for professional video productions.

YouTube as a Pedagogical Tool

There are a host of health-related video clips on YouTube. The gamut of health runs from the absurd to the serious. YouTube search results for “nursing education” revealed a 5-star-rated video production by “The Pediatric Understanding and Learning Simulation Education (PULSE) Center at Arkansas Children’s Hospital” (achwebman, 2007). This video illustrates the current effort of the Arkansas Children’s Hospital in Little Rock, Arkansas, towards improving the safety and health of children living around the world. Nursing education, treated as 2 words, and searching on the phrase “nursing education” returns videos specifically targeted to nurses (experienced as well as students). Topics addressed by these videos range from “Fluid & electrolytes” and “Administering an intra-muscular injection” to an inside joke video clip by those who worked on a UNM College of Nursing project. The breadth of content is only limited, it appears, by YouTube and or videographer creativity (search conducted 11.05.07 on YouTube.com).

According to Sandoval (2007) the University of California Berkeley (Cal Berkeley) is the first university in the United States to post full academic lectures on YouTube. Course lectures in fields





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such as chemistry, biology, physics, and even a lecture on search-engine technology are included in Berkeley's purported 300 hours of videotaped material offered on the Internet's number one video-sharing site, YouTube. The university is heralding their tradition of open educational content' and demonstrating a philosophy of sharing knowledge, events, and even athletics with millions around the globe. Cal Berkeley's YouTube website offers students' very positive comments (112 comments at the time of viewing the website, October 11, 2007) regarding the lecture videos. "Thank you so much. I am studying [sic] at a university in the UK. I have a lot to do in any 24-hour period and it is hard for me to retain information. Dr D's lectures are making a huge difference to my life as a student" (Berkeley, 2007).

Discussion and Implications for “You See” Nursing

Imagine you are a clinical nurse educator and want to create a simple step-by-step video about how to empty a Jackson-Pratt (JP) surgical drain for staff to provide patients discharged from the hospital with a JP drain. If the patient has Internet access at home the video may be viewed over and over again, as needed, to learn the procedure. If not they may ask a neighbor or relative, who has broadband access, to show them the video via YouTube. It is easy to create and may benefit, as well as extend to, nursing staff, patients, and other health care educators across the globe. Educators may benefit from a library of Web 2.0 applications and or creative assignment examples to assist learners as self-directed and creative learners or practitioners. If one has the capability of video-recording





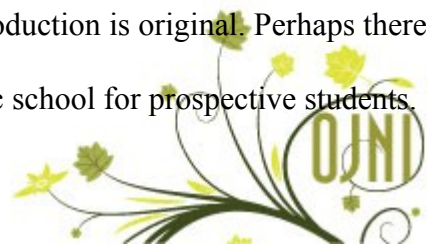
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presentations, lectures, skills demonstrations, and/or interviews then one may create a “YouSee Nursing” repertoire and make it available for students, clinicians, patients and others to view at their leisure. Groups of students studying medical-surgical nursing skills produced evidence based research videos by using compact Flip video recorders (<http://www.theflip.com/>) and presented them at the end of the academic semester. A sample of a creative and professional video may be viewed at <http://www.m2hnursing.com>.

Caaveats associated with the use of YouTube in education are copyright, credibility of content and information provided in the videos and bandwidth. One possible solution about copyright issues is a Creative Commons license. It is inexpensive and educators may point out to students the importance of researching the credibility of any multimedia or online source when using or creating a video for educational purposes. Moreover, nurse educators may be in a position to create an online site, similar to SciVee, to provide audiovisual explanation of a published article. This may be very helpful for students as they may be less fearful of writing and publishing after viewing a video about the content distributed via text.

Skiba (2007) asks faculty members to ponder the value of having students create their own videos instead of flat web pages or word-processed reports. Students creating videos may be one answer to alleviating the plagiarism problems because live video production is original. Perhaps there are advantages to creating a video about faculty members or specific school for prospective students.





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Skiba also asks if this is a way to alleviate distance between students and educators in e-learning environments. There is value in seeing someone's face in order to stay connected as one can attest to who uses Skype (Skype, 2007). The one disadvantage to video production is the “talking head” phenomenon, which needs to be remembered when producing the video for YouTube. Perhaps health care educators may consider incorporating liberal art courses into the curriculum, thereby encouraging students to learn how to create quality videos, podcasts, and other creative nuances.

Conclusion

Threats to creativity, innovation, and scholarship loom if restrictions on social networking sites occur in the future. Critics of the use of social networking tools, also known as “disruptive technologies,” in education abound; however, these critics are generally tech-challenged Digital Immigrants. The majority of students use “YouTube” as a verb and turn to video instead of reading a newspaper or even thinking of writing a card and mailing it at the post office. Patterns of communication have radically changed over the last two years and nurse educators may wish to continue to get to know who their learners are and how they prefer to communicate.

So, how do nurse educators reach these students? Perhaps the answer is to learn how to use Web 2.0 applications, such as YouTube, role model our ability to become “Digital Natives 2” and connect with them in education and life-long learning. YouTube is clearly about connecting with others and if health care information is provided for students and patients, in an easily accessible,





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veracious, and timely fashion, then let the video stream across blogs, websites, and mobile devices begin to connect and enhance students' and patients' visual literacy. Video is a powerful learning tool because one is able to replay scenarios for repetitive learning needs and meets the needs of the visual and auditory learner. Furthermore, it has the potential to integrate art and creativity with scientific knowledge and enhance students' learning in an economical manner. Finally, high quality portable video, that meets a specific learning need, has the potential to increase students' interest and motivation to learn and enhance students' learning effectiveness. The use of a learning tool supported by cognitive psychology tenets, that have the ability to illicit playfulness, connection and important thinking and learning skills is something nurse educators and students may want to adopt while pursuing professional education. Online videos accessed via YouTube may offer alternate concept explanations and perspectives inside and outside the classroom that are appropriate for generation X and Y students and assist these learners with developing important thinking and learning skills necessary for safe nursing practice.





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Dr. Margaret Hansen is an Associate Professor in the School of Nursing at the University of San Francisco. Her teaching focus is evidence based nursing research, instructional design, and health care informatics with a research focus pertaining to the use of technology in health care and education.

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