Chapter 16
Dermatological Telemedicine Diagnoses and Andragogical Training Using Web 2.0 Mobile Medicine Video Conferencing

Richard Brandt
Metroplex Dermatology, USA

Rich Rice
Texas Tech University, USA

ABSTRACT

Polymorphic innovations of Web 2.0 have both inspired and facilitated a near ubiquitous learning architecture centered on mobility, customization, and collective intelligence in a variety of fields. These reconfigurable pedagogical learning platforms have empowered participants by removing passive, standardized methods of unilateral knowledge delivery established by its Web 1.0 predecessor, and included a multitude of divergent, informal, and participant-driven social networks. These new technological devices and opportunities for self-guided, multidirectional knowledge exchange within newly established informal learning networks are affordable and flexible. Thus, McLoughin and Lee's (2007) moniker of "Pedagogy 2.0" is apropos (p. 672). The teaching and training of professional medical personnel, aligned with the flexibility and the capability of Web 2.0 platforms in the exchange of collaborative social learning, can be an authentic and productive knowledge-making andragogical approach to healthcare training. Such training must consider, study, and embrace social-constructivism, problem-based learning, andragogy, universal design for learning, media naturalness theory, divergent thinking, and the expanded rhetorical triangle in order to maximize the potential of mobile medicine through expanding the practice of telemedicine.

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INTRODUCTION

The medical healthcare industry, in particular, is among the many industries embracing Web 2.0 technologies and protocols in an effort to enhance productivity and quality of service. Clinically based healthcare communication is often referred to as "telemedicine" (Mair & Whitten, 2000) or "e-health" (Karkalis, 2006), and it has been employed for decades to enhance patient care. Time, space, and modality have often limited these efforts; one antiquated example of such treatment protocols includes the use of ship-to-shore radios by land-based physicians to offer treatment and medical advice to deployed sea captains (Wootton, 2001, p. 557). Web 2.0 methodologies not only utilize more advanced tools than a ship radio, but more importantly, they symbolize a new learning paradigm for divergent knowledge creation, user-guided problem-based learning, and untethered mobility. We call this mobile medicine.

The term "medical education" may include public awareness efforts, standardized student instruction, postgraduate review, and professional Peer-to-Peer (P2P) collaborative or divergent learning praxis. Mobile medicine focuses its attention on the latter. Ongoing postgraduate learning and continual training within the medical profession have made significant use of Web 2.0's P2P social learning platforms, and has further engendered new dimensions of electronic medical communication and consultation among healthcare professionals, including professional physicians, postgraduate residents, physician assistants, and nurse practitioners. It is within this subset of medical education that the advances of Web 2.0 and social networking make profound contributions.

Adult learners in the professional workplace, long removed from academia, especially those in the medical professions, feel more comfortable with certain learning styles than others, based partially on the learning models introduced during their formal medical training and in part due to how adults learn in general. For one example, adult learners need to utilize prior knowledge and experience as both an ongoing guide and a starting reference point for new learning experiences (Nelson, 2010, p. 101). Learning theorists Knowles, Holton, and Swanson (2005), in fact, go on to suggest that adult learners have a need to know as well as a need for a foundation of knowledge, a need for ready content as well as immediately relevant orientation, and a need for personal motivation. Further, they point out that adult learners need to play a direct role in planning and evaluating their own instruction. As such, the subject matter in patient-centric medical learning often elicits more knowledge transfer if the content is problem-centered rather than content-oriented (Knowles, Holton, & Swanson, 2005).

Andragogy, which is the study of how adult learners learn, is often in contrast to the pedagogical analogy of a "blank canvas" that didactic learners, and many medical students, are thought to utilize. As healthcare professionals transition from one paradigm, or from one discourse community to another, more familiar learning practices seem less intrusive. This is also the case for allied health professionals, such as physician assistants, nurse practitioners, physical therapists, and registered nurses. Medical school education is initially structured on a generalized, science-based learning architecture (e.g. anatomy, physiology, genetics) that is meant to fortify each student's knowledge foundation. This framework later evolves into an individualized, constructivist-like, problem-based learning model (e.g. why is Mrs. Smith having symptoms A, B, and C?), wherein each participant actively develops an individual learning framework. The social and rhetorical context—such as the hospital-based training setting—encourages collaborative and collective knowledge accumulation. These small group discussions do not require unilateral agreement. They have been found to have a "larger positive effect on prior knowledge activation than individual analysis" (Dolmans & Schmidt, 2006, p. 324), leading to