# Chapter 2.1
# Building Better E-Health Through a Personal Health Informatics Pedagogy

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## ABSTRACT

E-health use is increasing worldwide, but no current e-health paradigm fulfills the complete range of user needs for online health services. This dilemma clouds a number of issues surrounding e-health, as promoters of e-commerce, personal health records, and consumer health informatics paradigms attempt to create encompassing e-health within the constraints of each unique perspective. In the long term, the most important of these issues may be the need to develop an e-health pedagogy that offers conceptual grounding and course curricula in order to effectively represent all facets of e-health. To address that issue, this article introduces a personal health informatics (PHI) paradigm that incorporates the best features of preceding paradigms by integrating informatics, personal, and healthcare perspectives. Drawing from PHI, a pedagogical framework is proposed to guide instruction in the design and development of encompassing e-health.

## INTRODUCTION

Use of e-health continues to expand worldwide. Harris Interactive reports that the number of Americans who have searched for health information online has increased to 117 million, and 85% of the these individuals searched within the month prior to being surveyed (Krane, 2005). Outside the U.S. and Europe, e-health use has grown more slowly (Holliday & Tam, 2004). However, further expansion seems likely as the World Health Organization and similar groups undertake efforts to increase availability of e-health in developing nations (Kwankam, 2004; WHO, 2005).

While some aspects of successful e-health are well-established, such as the need to provide encyclopedic health content, other aspects are less obvious. For example:

- Which services should be deployed online, and how should users interface with these services?
- If communication is offered, what is the best way to coordinate this to balance the needs of the public with those of healthcare

representatives (e.g., physicians and clinic staff)?

- How should personal health records (PHR) be incorporated into e-health, who owns the data in these records, and what (if any) data should PHR share with records of the healthcare provider, insurer(s), and payer(s), such as an employer or a government agency?

These are not idle questions to the health informatics and IT professionals who must design and deploy e-health applications. However, the area of e-health currently is underserved (or not served at all) in health informatics and IT curricula. This is a situation that should be remedied as soon as possible, given the large number of healthcare providers who currently are investing in e-health as an important part of organizational strategy (Lazarus, 2001; Martin, Yen & Tan, 2002).

In developing effective curricula for designers and developers of e-health, I propose that it will be helpful to view e-health from a user-centered perspective that can incorporate best practices of current e-health paradigms without being limited by their constraints. This article presents the foundational concepts that underlie this perspective and proposes a new pedagogy.

## PARADIGMS OF E-HEALTH

E-health is a broad domain with numerous published definitions that primarily address the convergence of healthcare and Internet technology (Oh, Rizo, Enkin, & Jadad, 2005). A frequently cited definition by Eysenbach (2001) highlights e-health's interdisciplinary underpinnings.

*E-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.* (Eysenbach, 2001, p. e20)

Historically, each of the paradigms discussed in the following sections has played an important role in developing e-health to its current state. Yet, I will argue that none of these paradigms fulfills the complete range of user needs for online health services, and for this reason, none presents a suitable basis for pedagogy in design and development of encompassing e-health.

### E-Commerce Paradigm

Prominent early developers of e-health services operated within an e-commerce paradigm in which vendors expected to profit from users paying directly for products and services acquired through the site or from advertisers paying for exposure to users. Typically, vendors were not affiliated with healthcare providers, so they could not provide services that link individuals with their own physician, clinic, or pharmacy. Although numerous vendors developed e-health within the e-commerce paradigm, few survived the ensuing shakeout due to failure to provide value to customers or to adequately control costs, lack of effective revenue models, or simple inability to ensure sustainable competitive advantage (Itagaki, Berlin, & Schatz, 2002; Rovenpor, 2003). Among the prominent e-health ventures representing the e-commerce paradigm, such as DrKoop.com, MediConsult.com, and PlanetRx.com, only a handful remains. The best-known of these is WebMD, which provides an exceptionally wide range of health services but continues to struggle toward profitability.