Chapter 3
Web 2.0 Tools in Biomedical and Pharmaceutical Education:
Updated Review and Commentary

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ABSTRACT

Web 2.0 technologies are being rapidly integrated in higher education, which dramatically influences the ways learners approach and use information. Knowledge transfer has evolved into a two-way process. Users no longer simply consume and download information from the web; they create and interact with it. Several theoretical works were developed in order to discuss the possibilities of integration of Web 2.0 tools in Pharmacy, Medicine, Allied Health, Nursing and many other Biomedical Areas. Other works have started gathering qualitative and quantitative evidence of the importance of Web 2.0 tools in the learning process. By performing this integrative review, this paper will provide an overview of what is being done in biomedical and pharmaceutical education, and elaborate some of the potential opportunities and challenges that these applications present. With this updated review we hope to give our contribution to consolidate research in this promising area.

INTRODUCTION

Internet social applications, normally referred as Web 2.0 tools, are making their way in the new teaching paradigms of higher education. Since their early development, primarily for entertainment and social communication within the general population, applications such as blogs, social video sites, and virtual worlds (Barsky, 2006) are being adopted by higher education institutions in a vast range of scientific areas (Boulos, Maramba, & Wheeler, 2006). It has been argued that Web 2.0 technologies have the potential to change the education of healthcare professionals, from a didactic one way process to a collaborative and participative process, empowering the student to be an equal participant in the learning

process(Ward, Moule, & Lockyer, 2009). Web 2.0 applications appear to offer exciting new ways to teach, however, research into the use and evaluation of Web 2.0 tools in Biomedical and Pharmaceutical Education is still in its infancy, and the current pedagogic evidence about these tools is still lacking (Boulos et al., 2006)(Cain & Fox, 2009). In specific areas such has Pharmacy and Allied Health education, the examples are not wide, but the increasing use of teaching methodologies such as case based learning (Jesus, Cruz, & Gomes, 2011), might contribute to the implementation and dissemination of these tools. Wikis, blogs, podcasts and other tools have already been mentioned in some papers regarding higher education (Poonawalla & Wagner, 2006) (Kamel Boulos & Wheeler, 2007). These Web 2.0 technologies are in fact emerging as platforms to enable or encourage students to collaboratively create and share their own insights into current and emerging themes within their education. The number of tools and users are increasing and finding a place in healthcare management, education and practice (Ward et al., 2009). While it seems Web 2.0 might offer the potential for online learning to support pedagogy, in higher education there is little understanding of how and where it is being used to support biomedical education (Ward et al, 2009). This study is aimed to explore what specific Web 2.0 tools are being used, with what purposes and in what contexts.

In this updated review we will also focus on the most recent evidence about the use o Web 2.0 tools in pharmaceutical education, and share our own experiences on this topic.

METHODOLOGY

The study design is descriptive (MacMillan & Shumaker, 1997) and adopted the format of an integrative review (Cooper, 1984) since the objective was to make a synthesis of results (secondary analysis) from previous studies (primary analysis), in order to respond to new questions, new hypotheses and to verify or establish new relationships (Fortin, 2009). It is well documented that research reviews are considered research of research, and therefore should meet the same standards as primary research in methodological accuracy (Cooper, 1998). Cooper (1998) has delineated the process of conducting a research review as encompassing a problem formulation stage, a literature search stage, a data evaluation stage, a data analysis stage, and a presentation stage.

Problem Formulation Stage

This study primarily aims to characterize the use of Web 2.0 tools in biomedical and pharmaceutical education between the years of 2004 to 2014, and gather data to assess the potential educational values and hurdles to overcome. To constitute the categories of analysis we kept in mind the specificity of the object. Accordingly, the following variables were considered:

1. Year of publication,
2. Type of web 2.0 tool,
3. Biomedical area,
4. Type of publication,
5. Type of article and, finally,
6. Type of empirical study.

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