

# Chapter 11

## Web 2.0 Technologies for Problem-Based and Collaborative Learning: A Case Study

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### ABSTRACT

*Collaborative problem-based learning (PBL) has a well established history within medical and health care education. Undergraduate nursing students at the Glyndŵr University undertake PBL to explore ethical issues of health care; traditionally these students meet in person to discuss scenarios, provided by tutors, and present the product of their deliberations to the rest of the class. The geographical dispersion of the students has meant that most discussions have been limited to those times when the students are physically on campus by virtue of their timetabled classes. By using Web 2.0 technologies, students are able to collaborate at distance, at a time that suits them. This chapter describes how students have used these emerging technologies to share ideas and resources to prepare for class presentations; described also are the underpinning theories that inform this work together with an analysis of student use and feedback.*

### INTRODUCTION

This chapter describes how Web 2.0 technologies, in particular wiki pages, have been used to facilitate group work with undergraduate nursing students at the Glyndŵr University, United Kingdom. We begin by examining the theoretical basis for ap-

plying this technology to facilitate collaboration; we describe the nature of the problem based group work and its pedagogical value; we analyse, from the perspective of both tutors and students, the effectiveness of this approach and finally we examine the nature of discourse between students, freed from the constraints of the traditional classroom environment. Our conclusion supports the view that, sympathetically used, Web 2.0 technology

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can enhance the level of “conversation” between students, enabling students living remote from the university campus to engage productively in group tasks and providing a flexible forum for collaborative work.

In employing a wiki to facilitate student collaboration, tutors are able to observe the process by which students develop their final presentation, providing an opportunity to scrutinize group dynamics. We also explore how the “facebook generation” adopt language styles which are distinct from the academic language normally used within the formal classroom setting.

## **BACKGROUND**

The past few years have witnessed an explosion of Web 2.0 applications. Social networking sites such as “Facebook” and blogs have become increasingly popular, especially with young adults, and many of us in higher education are beginning to consider how this phenomenon can be used to facilitate learning. We now have a ‘connected society’; connected not by face-to-face interaction but by the internet; geographical location is no longer a barrier to discourse and interaction. Whilst the social aspects of learning have long been recognised by educational philosophers such as Vygotsky, it is only recently that new theories of learning have started to emerge that reflect the burgeoning potential of the digitally connected society. Siemens (2004) has coined the phrase “connectivism” to describe how learning can reside outside the individual and how individuals can contribute to a social network of understanding and knowledge. Connectivism applies to that nebulous entity, the internet and, one supposes, to the growing use of mobile devices to access, and contribute to, a shared, socially situated body of knowledge. The scope of this chapter, however, is narrower; focussing on a single aspect of emerging technologies, the wiki, and how this can be used to exploit the potential of social networking to

enhance the learning of the individual.

O’Reilly (2007), in exploring how Web 2.0 technologies allow for “remixing” of data from various sources, describes how individuals use technologies to collaborate to a common cause; this “harnessing of collective intelligences” (O’Reilly *ibid*) generates a product that is greater than the sum of its parts. This has resonances with the social constructivist approach to learning of Vygotsky and the connectivist approach of Siemens. Boulos *et al* (2006) have highlighted the potential of wikis to help facilitate learners in constructing their own knowledge, leading to a deeper understanding. Based upon this theoretical underpinning, the authors determined to examine the potential of wiki technology to facilitate collaboration between groups of geographically dispersed nursing students.

## **ISSUES, CONTROVERSIES, PROBLEMS**

As Adams (2004) observes, nurse education is not simply a matter of presenting students with information to remember and reproduce in examinations; it requires the students to think creatively, to collaborate and to critically reflect upon practice. Whilst by no means unique in this respect, nurse education lends itself to a constructivist or connectivist approach to learning, especially when aligned to problem-based learning (PBL). Cognitive conflict (Savery and Duffy, 2001), whereby learners are presented with problematic scenarios that challenge their preconceptions provides a basis for reflection and, through collaboration, for constructing new paradigms of practice. Rather than providing them with solutions, students are encouraged to explore scenarios, to construct frameworks of understanding and to resolve personal and collective conflicts.

Problem-based learning and collaboration is not new in nurse education (Davis and Harden, 1999; Wood, 2003) but emerging technologies

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