

## Chapter 2.12

# Developing REALSpace: Discourse on a Student–Centered Creative Knowledge Environment for Virtual Communities of Learning

**Kam Hou Vat**  
*University of Macau, China*

### ABSTRACT

This manuscript is to provide an action research report on the issues behind the prototyping of a student-centered creative knowledge environment (CKE), which focuses on developing student responsibility, making learning meaningful, promoting overt knowledge construction, performing learner assessment, and showcasing learner achievements. The primary idea is to create an electronic knowledge space where students are enabled to learn through constructing rich portfolios of knowledge work. The issue of learner responsibility lies in student's willingness to identify learning deficits, setting goals, managing the learning process, and monitoring the learning strategies they use. The issue of meaningful learning lies in providing students with realistic problems, which are conducive to the development of capable problem solvers. The issue of active knowledge construction lies in providing

students with opportunities to engage in high-level thinking, reflection, and articulation activities, with suitable support to scaffold students in their pursuit of active learning.

### INTRODUCTION

In an age where innovations in social computing and the mainstreaming of electronic tools are unlocking new opportunities for blending online with face-to-face interactions (Neto & Brasileiro, 2007), high expectations have surrounded e-learning initiatives (Ertl, Winkler, & Mandl, 2007) in various sectors of our society, including our enterprises, institutes and universities. The term *e-learning* carries the connotation of flexible and efficient learning with the support of electronic media (Littlejohn & Pegler, 2007) – in particular with the help of computers and the Internet. Nonetheless, it is our belief that e-learning

should make sense only when its use reflects a new culture of learning, as exemplified by that of a learning organization (Senge, 1990), whose focus lies mainly on the learner (or communities of learners) rather than merely on technology itself. To this end, the discussion presented in the manuscript is organized around story-telling our prototyping work for the student-centered (Vat, 2004b) creative knowledge environment (CKE) (Hemlin, Allwood, & Martin, 2004) from the perspective of developing socio-technical systems (Emery & Trist, 1960) enabled by the Web (or Web 2.0) technologies (Vossen & Hagemann, 2007) of today's Internet. By socio-technical systems, we mean there is an interdependent and reciprocal relationship between humans and technology; namely, both the social and the technological aspects of knowledge work need to be in harmony to increase effectiveness and to "humanize" the environment. Technically, this would be achieved mainly by user participation in the design of the systems and devices that users are to operate at the knowledge environment. Our first piece of story telling, after setting the backdrop of our organization, describes the initiative to define a new culture of learning which can be conceived as the design philosophy behind our e-learning system, providing as much student-centered virtual learning experience as deemed possible. The second item of interest elaborates on the e-learning system currently under active reshaping by our students, which is called *REALSpace* from its former version of implementation in 2000, named *REAL*, meaning a Rich Environment for Active Learning (Vat, 2001a, 2001b). Presently, we add the space concept in the form of personal, group and project workspaces respectively to broaden the ideas of collaboration and teamwork. Our third item of concerns lies in the educational potential of e-portfolios (Vat, 2008a, 2008c; Stefani, Mason, & Pegler, 2007), a renewed concept of the paper folio as a tool of reflective learning, performance assessment as well as personal

development planning through the Web. The fourth story is concerned with the context of our CKE developed from the theme of problem-based learning (PBL) (Vat, 2006a, 2004a), whereas the fifth story tells of the knowledge processes behind our virtual community of learning (Vat, 2006c, 2006d). The manuscript then deliberates on the design approach of our CKE, rendered from the perspective of socio-technical systems incorporating knowledge sharing among members of the learning community. The article concludes with a relevant discussion of the problems facing our work, and some remarks of continuing challenges related to our research on student-centered inquiry-based teaching, applicable in the context of virtual communities of learning.

## SETTING THE STAGE

The Department of Computer and Information Science (CIS), as a constituent unit of education under the Faculty of Science and Technology at the author's affiliated university, is installed to offer degree programs in both the undergraduate and graduate levels in Software Engineering. The department has a current population of about 150 undergraduates and 30 graduate students mostly part-time. It has to coordinate per academic year, the enactment of about 20 graduate and 40 undergraduate courses. There are currently five laboratories installed for the IT-education of our students: Software Engineering Laboratory, E-Commerce Technology Laboratory, Distributed Systems Laboratory, Computer Graphics and Multimedia Laboratory, and the Motion Capture Laboratory. Besides, there are over two hundred PC's distributed on campus, to offer 24-hour computer service to our students, including Internet access. To help manage course delivery, the university also provides course management systems, such as WebCT (since 1998) and MOODLE (since 2008) to teaching staff for

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