Chapter 19
Developing a Learning Organization Model for Problem–Based Learning: The Emergent Lesson of Education from the IT Trenches

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EXECUTIVE SUMMARY
This case describes the initiative to develop a learning organization model to support the pedagogy of problem-based learning (PBL) as an approach to conduct teaching in the author’s undergraduate curriculum development. Specifically, an organizational scenario is described to support introducing the PBL method of course delivery. This is based on an action research depiction on some of the experiences and issues involved in conceiving and developing a Web-based course-support environment called REAL (Rich Environment for Active Learning). This case then deliberates on the idea of setting up a Center for PBL Research as an important mechanism of institutional innovation. This center could be considered as an essential effort to encourage individual organizational units within the university to provide suitable electronic services toward the realization of a virtual university. The dilemma of this effort, however, remains the emergent changes of organizational behavior in education, which is essentially subjective, eclectic, individual, context-specific, and often one-off, making it traditionally the most difficult to support with technology.

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ORGANIZATION BACKGROUND

The Department of Computer and Information Science (CIS), one of the six organizational units 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 about 30 graduate students, mostly part-time. It has to coordinate per academic year the enactment of about 20 graduate and about 40 undergraduate courses. The department is headed by a full professor, who manages the work of an academic team composed of other full professors, associate professors, assistant professors, lecturers, research and teaching assistants, as well as laboratory technicians. 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 is a computer barn with more than 200 PCs provided by the university to offer 24-hour computer service to our students, including Internet access. To help manage our course delivery, the university also has provided the WebCT to our teaching staff since the beginning of 1998. Currently, we are using WebCT Version 4.1 Campus Edition. The means of education delivery in our department has been largely didactic; yet, we are open enough to blend the best of our old values of good teaching through the instructivist approach with the constructivist way of thinking, such as problem-based learning (PBL). We also are interested in the continuing efforts to extend our curriculum and instructional practice over the Internet through our continually renewed Web-based course support, both for the teaching staff and for the students.

SETTING THE STAGE

As an organizational unit of our university, the Department of CIS has always relied on the mainstream IT resources continually made available for the utilization of our staff and students. To set the stage for our case discussion, it is important to understand the build-up history of IT infrastructure in our university.

Campus Network with Internet Access

Starting in 1993, our university was the first in Macau to introduce fiber-optics and structural cabling system to link all the campus computers. In 1998, our university laid the first high-speed ATM (Asynchronous Transfer Mode) network in Macau.
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