

Chapter 13

Using a Web-Based System to Support Teaching Processes

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ABSTRACT

A platform-independent Java Web application named TSI (Teacher-Student Interaction) that supports communication between an instructor, teaching assistants and students in a traditional on-campus course is presented in this chapter. Using the TSI, the instructor and teaching assistants can handle most of the routine work: upload student personal information, send students personal emails, etc. The system can easily be installed and administered individually by an instructor inexperienced in computers. It is as simple as a pen for students. Students can check their personal data (scores and comments), download educational materials, etc. As part of the TSI, a VBA application is used to analyze the course log files. This tool is helpful in understanding individual and group students' behaviors. The TSI was successfully tested during six years at the University of Aizu (Japan) in an environment where English is one of the working languages and both students and professors are non-native speakers of English.

INTRODUCTION

During the last decade, a lot of work has been done in designing new methods and tools to support course management and communication between professors and students in everyday university life. Different solutions have been proposed to simplify student access to class material, to help students submit the results of exercises, to help professors

distribute lecture notes, to get student feedback, and to monitor student progress (Llamas-Nistal et al., 2004). In many cases, these solutions are not ideal.

In classroom situations where both teachers and students use their second language, communication becomes a crucial factor. Such a situation is found in some Japanese universities where the official language of instruction is English but both professors and students are non-native speakers of English.

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One solution to improve communication between professors and students is to turn to the Internet and to use modern information technologies. These have impacted the university teaching processes in significant ways.

There are two main directions in designing communication tools:

- universal systems with a large number of features (Angel, 2009; Blackboard, 2009; Top Class E-learning Suite, 2009; WebCT, 2009),
- specialized systems dedicated to specific purposes (Nicenet, 2009; Tuckman, 2003).

The large portion of these systems is designed to support on-line teaching (Pahl, 2003). As it was noticed in (Bonk, 2002), there is a myriad options, making it difficult to determine the right system to apply to university courses. The number of core functions provided by each system is practically the same. For professors, these functions include: a) making lecture notes available to students, b) monitoring student progress, c) analyzing student behaviors, d) obtaining student feedback, e) exchanging e-mails with students, f) providing students with their grades, and g) managing student accounts. For students the set of functions consists of the following: a) accessing class material, b) exchanging e-mails with professors, c) accessing personal grade information, d) submitting the results of exercises, and e) changing their password. The main problem with the tools of the first category i.e., universal systems, is the number of features: The end user does not need most of them (Moodle, 2009; BlackBoard, 2009; Woods et al., 2004; Kaiden, 2002). As a result, the system interface is not intuitive and support from experts and permission for installation from the university network administrator is required (Storey et al., 2002). For example, to learn how to post the basic documents such as a syllabus and a schedule using BlackBoard, the professor should attend a 2-hour workshop (FSU, 2009).

WebCT, another famous tool in this category, is equally complicated: Its manual contains 563 pages (Rehberg et al., 2004), which no instructor is inclined to read. Special auxiliary software is introduced to simplify work with BlackBoard and WebCT (Course Genie, 2009). Another drawback of these systems is user frustration with information technology (Lazar, Jones, and Hackley, 2006). Storey et al. (2002) and Masiello et al. (2005) pointed out that when tools are hard to navigate, they not only have a neutral but negative effect on learning.

On the other hand, the tools in the second category, i.e., specialized systems, are difficult to adapt to teaching needs (Yen and Wu-Jeng Li, 2003; Tuckman, 2003).

To summarize, we note that information technologies for teaching processes are growing very fast. The market offers many different tools. To use the most of universal systems, users need external assistance. Instructors and students have to waste time to learn how to apply the features of the tool.

In the traditional on-campus course, instructors prefer to retain their conventional style of teaching even when using computer technologies. They need assistance in the routine. They want to distribute handouts and assignments before the lecture and to post them on the Internet to make materials available only for students enrolled in their class. Communication with students, tracking their progress, and checking grades by students are tasks to put on the Web. In this face-to-face mode, subjects such as math and computer science remain an individual rather than a group activity. This model is distinguished from either distance or traditional instruction. How can it be employed in campus computer labs?

We introduce an approach using the TSI (Teacher-Student Interaction) system that provides assistance in the routine and that may be of interest to teachers and professors. Our aim was to design the tool which can be installed, set up and administered individually even by a

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