Chapter 4
Time-Shifted Online Collaboration: Creating Teachable Moments Through Automated Grading

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ABSTRACT

This chapter examines online collaboration in a distributed e-learning environment. The authors describe the emerging technology of Web-based automated essay grading that provides extensive real-time data for monitoring and enhancing e-learning activities. They examine data from student use of this software service in a large introductory social science class. Using information routinely collected by the system, the authors find that students take advantage of this learning environment to revise and resubmit essays, dramatically improving their final grade by an average of 20% or two letter grades. They conclude the essential components of this learning environment that makes it so successful are its ability to provide detailed, personalized feedback to students immediately after they submit their work along with the opportunity to revise and resubmit. This transforms an automated assessment tool into a powerful collaborative learning environment. Instead of waiting days or weeks for instructor comments, that feedback is time-shifted to occur at the time it can be most effective for students. Changing the timing of feedback creates a powerful teachable moment when students have motivation, information, opportunity, and feedback. They are motivated to improve their grade, they are told what they did right or wrong while the relevant information is fresh in their minds, and they have the opportunity to revise and resubmit. The chapter ends with consideration of how those same elements can be, and sometimes already are, used in other instructional strategies such as podcasting to create effective learning environments that take advantage of the teachable moment.

DOI: 10.4018/978-1-60566-786-7.ch004
INTRODUCTION: STUDENT – INSTRUCTOR COLLABORATION

The relationship between students and instructors takes many forms. In traditional large lecture course communication is mostly one-way with very little interaction. Most class time is devoted to the instructor lecturing passive students. Then, a few times a semester student performance is evaluated in tests. The role of the instructor is primarily to lecture and evaluate student performance. There is little or no two-way communication between instructor and student. In contrast, the constructivist classroom (Jonassen et al., 1999) provides a collaborative learning environment in which the instructor’s role is guiding students, coaching them to help them learn. In such a classroom there is repeated interaction between instructor and student as the student benefits from instructor feedback to enhance their understanding and, not incidentally, improve their grade. The constructivist environment is a collaborative learning environment in which students learn from repeated instructor feedback.

Increasingly, that collaboration takes place online. Distributed online environments provide the benefits of space-shifting: students and instructors need not be in the same place to interact effectively. This dramatically expands learning opportunities for many, increasing access and reducing travel costs and time. However, some of these new online environments have the ability to provide not only space-shifting but also time-shifting. “Many times learners are more interested in time-shifting capabilities provided by technology-based distance education systems than they are in the location-shifting capabilities of the systems” (Major & Levenburg, 1999). Unfortunately, synchronous collaboration which is the most effective is often impractical, while asynchronous collaboration is much easier to arrange but less effective for learning.

Synchronous collaboration (as exemplified by traditional classrooms, telephone conversations, or chat rooms) requires students and instructors to engage in interaction at the same time. The importance of interaction in learning is widely recognized from many perspectives, though it may often be described as “engagement,” “participation,” or “collaboration.” It is widely agreed that “learning rarely takes place solely through unidirectional instruction. The social process of interaction is required for optimal learning (Lave & Wegner, 1991).” Many studies have found that some form of participatory interaction by students is critical to their success in face-to-face and in distance education courses (Keersley, 1995); (Sutton, 2001). This engagement is illustrated by what it must have been like for Plato and Socrates to participate in a Socratic dialogue1. There the instructor and student are simultaneously focused on the learning task. The student can ask questions and immediately receive a response from the instructor. The instructor can gauge the student’s progress and decide when she is ready to go on to more advanced material. If the student makes a mistake, the instructor can immediately point out the problem and explain what they did wrong.

Synchronous interaction encourages such engagement. But it does so at a cost. Merely putting instructor and student in the same room at the same time does not assure effective collaboration. Synchronicity requires students to learn on the same schedule that instructors teach, something that can be inconvenient or impossible for students whose work schedule causes them to miss classes. Worse yet, it may impose a schedule for learning on students that does not fit their optimal learning times (witness students sleeping in class, doodling, or surfing the web with their laptops). Likewise, it can impose a schedule on instructors that conflicts with other activities (e.g., when students all submit papers at the same time just before a holiday, or call the instructor’s home at night with questions).

Asynchronous collaboration, typified by email or discussion group postings, does not require that everyone participate at the same time and is often