

## Chapter 3.15

# Using Notification Systems to Create Social Places for Online Learning

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### ABSTRACT

Context-aware activity notification systems have potential to improve and support the social experience of online learning. The authors of this chapter have developed a context-aware activity notification system (CANS) that monitors online learning activities and represents relevant contextual information by providing notification and making the learning activity salient to other participants. The chapter describes previous efforts to develop and support online learning context awareness systems; it also defines the critical components and features of such a system. It is argued that notification systems can provide methods for using the context of activity to support members' understanding of the meaning of activity. When designed and implemented effectively, CANS can turn course management systems (CMS) into technologies of social interaction to support the social requirements of learning.

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### INTRODUCTION

Online learning in its various forms plays an increasingly important role in how students learn, how faculties teach, and how higher education meets the needs of its constituents. However, while online learning plays a powerful role in broadening access within and beyond campus sites, there is a growing concern that it may be diminishing the quality of teaching and learning by forcing instructors and learners to view courses through the narrow lens afforded by contemporary software systems. Today's approach to online learning is encapsulated in course management systems (CMS) of which Blackboard, WebCT and Sakai represent most popular applications. The CMS provide fairly effective ways for instructors to give and control access to course information (syllabus, assignments, grades) and instructional resources. They also present some facilities for direct interaction through discussion boards and chat rooms. The CMS approach helps manage the course and related information but is

limited in supporting the interaction, coordination and cooperation between students and instructors. The authors of this chapter have developed a Context-aware Activity Notification System (CANS) (Amelung, 2007; Laffey & Amelung, 2007) as a mechanism for improving social ability in online learning (Laffey, Lin, & Lin, 2006). CANS is a software system that monitors activity within an information system, represents relevant contextual information (such as where, when or under what conditions), and provides notification to other participants about the activity.

In traditional face-to-face courses instructors and students come to a physical place where they mutually act out the course activities. Coordination and cooperation are facilitated by cues and structures in the context: such as, a bell ringing to signify it is time to attend to the teacher, the clock on the wall providing a common marker for knowing how long an activity should last, or students passing completed work forward at the end of a class period. Seeing how others use these cues and structures also shapes interaction. However, in online learning the CMS is a black veil between the instructor and students and among the students. Faculty and students are limited in their knowledge about what is happening in the course to the “words” spoken. Students do not see other students working; nor for the most part do they see each other’s products. Instructors do not see students working and can only influence them with words. Similarly, students do not see instructors working outside of the formal presentations and feedback prescribed by the instruction. Seeing that an instructor has read your discussion post or looked at the file you uploaded to share with the class may encourage participation and develop a sense of an interpersonal relationship with the instructor.

Evidence of high dropout rates in distance learning attests to the problems that students may have with this form of education. Chyung (2001) found that online learners who dropped out perceived that their online learning environment

was not engaging, had low levels of confidence while learning at a distance, and had low satisfaction levels for the instructional processes used in the online learning environment. The incidental learning that happens through working together, the social navigation that happens through observing others, and the motivation to keep learning that happens because of a sense of shared social experience are possible in a traditional classroom because members see and experience activity in context, but in online learning these outcomes are greatly constrained. However, there is potential for new social interaction technologies to improve the social experience and social support of online learning. These same approaches and technologies that have potential for supporting the social nature of online learning may also be important to online collaborative work and leisure activity. The ability to turn an online space into a social place is a challenge to the design and implementation of all forms of online activity and interactivity. This chapter describes one such social interaction technology, context-aware activity notification systems. These systems have the potential to make the activity of other members salient and to enhance the social nature of learning in an online space, in this case a course. To the extent that these notifications are provided in ways that are meaningful to the social roles and interactive tasks of being in a course, then the members will experience the online environment as a social place for learning and activity.

## **BACKGROUND**

The goal of transforming course management systems from information space to social place is in keeping with the recognition that education is a social activity and that information access and use has a social nature. In *The Social Life of Information*, Brown and Duguid (2000) summarized a growing recognition that information systems need to both support use in social contexts

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