Integrating Synchronous and Asynchronous Components into Graduate Curriculum to Improve Learning Effectiveness and Better Serve Students with Time Constraints

[**ABSTRACT**] Hispanics lag behind other major ethnic groups in attaining post-secondary degrees, especially Master's degrees. Most Hispanic students start their career as soon as they get a Bachelor's degree. Later they realize that a higher degree, like M.S. in CS, comes with more opportunities and better salaries. By that time, it seems too late to return to school because they have already been involved in many responsibilities that discourage them from pursuing any advanced degree. To resolve this dilemma, they may choose between two options. The first option is that they can pursue a fully online degree from some online university. However, lack of face-to-face interaction with faculty and fellow students makes them concerned about the effectiveness of distance learning. The other option is that they can choose a local university that is accessible both online and face-to-face. The second option is obviously more feasible for most students. In fact, studies show that hybrid (combining online and face-to-face) course offering appears more effective in learning than face-to-face or fully Web-based.

To better serve the needs of prospective students who have interests in pursuing a graduate degree but are not able to attend traditional college due to other commitments, **we propose a pilot project to integrate both synchronous and asynchronous components into graduate curriculum that allows for reduced seat time**. The goal of the project is to improve the existing graduate program in Computer Science (CS) by developing, implementing, and evaluating an innovative *hybrid lecturing mode* at the University of Texas at Brownsville and Texas Southmost College (**UTB/TSC**), which serves approximately 17,000 students, of which over 90% are Hispanic.

The graduate program in CS will offer a series of hybrid courses that adopt a primary learning management system with a lecture capture system and a conference management system embedded in it. The adopted technology is intended to deliver highly illustrative and highly interactive learning events in hopes to afford in-depth classroom discussions and to foster accelerated learning. The lectures in the classroom will be *live broadcasted* (synchronous), recorded, *edited* (asynchronous), stored, and (re)accessed online. Consequently, students who take online courses can expect to receive practically the same lecturing using their PC or portable devices (e.g., PDA, iPhone, iPod) as those who physically attend live sessions. Meanwhile, online students have the flexibility to either study online at a distance as they wish or go to a physical classroom if time permits. The **innovation** of the project is many-fold: *the flexibility of the program completion*, *the unique content delivery system*, *the editing process of lecture videos*, and *the seamless integration of education software* (e.g., Wimba, Tegrity and Blackboard).

The project will expand our graduate program to serve more students, not limited to Hispanics in one region. Prospective students can be high school teachers who are required to have a M.S. degree or have taken a certain amount of graduate courses to teach computer-related courses, or IT professionals who work full time in industry. What our proposal addresses is a common problem nationwide. This project is replicable in other regions of the country. The exploratory study will provide an important step into better understanding of how the hybrid mode and video streaming lecture affect learning outcomes and student satisfaction. The project will be systematically evaluated and the results will be disseminated in (inter)national e-learning conferences and journals.