Emerging Technology Grants Proposal 2011-12

USM Online Center for Technology Enhanced Learning

Enhancing Collaborative Learning Using Smart Board 885ix Interactive Whiteboard System

Amarpreet S. Kohli, Assistant Professor, School of Business
Matthew D. Dean, Assistant Professor, School of Business
Prashant Mittal, Research Analyst, Muskie School of Public Service

April 13\textsuperscript{th}, 2011
Project Narrative:

Title: Enhancing Collaborative Learning Using Smart Board 885ix Interactive Whiteboard System in Quantitative Business Administration Courses

Statement of Need/Problem

Quantitative courses (i.e., operations management, management science, and statistics) are critical components of business education: they provide students with skills to critically assess and understand the various aspects of a business environment in a meaningful way. Students need to expand and sharpen their analytical skills in order to enhance their opportunities for a successful career in the business world. However, students often lack interest or motivation to engage in learning to their best ability when exposed to numbers. In fact, many undergraduate students have difficulties with basic high school algebra and arithmetic (McClure & Sircar, 2008). Therefore, anxiety around quantitative courses becomes a major hurdle for students’ success in these quantitative courses.

Research supports that at all levels of educational careers, these courses are disliked and seen as compulsory pass/fail impediment (Burton, 2003). Many students regard them as the most difficult and least pleasant courses and complain about their mathematical nature (Baloglu, 2004). In the School of Business, we have observed these same sentiments which appear to be a major obstacle in student success and retention. It has also been corroborated through research that student performance in business programs is closely related to their performance in quantitative courses (Hamada, Patell, Staelin, & Wecker, 1988; High, 2000; Truell & Woosley, 2008). Therefore, it is critical that we, as instructors of the quantitative courses, find ways to help students succeed in the quantitative courses.

We appreciated the reflections provided by Viilo, Seitamaa-Hakkarainen, and Hakkarainen (2011) who have argued that as instructors it is our responsibility to help students develop collaborative inquiry-based learning practices through use of technology. Collaborative learning is an instructional method whereby students are encouraged to work together in small groups toward a common academic goal and that can be effectively achieved in the classroom using technology (Gokhlae, 1995). Towards this end we have already integrated use of software packages such as Minitab, WinQSB, and Excel, and the educational programs Cengage Now & myomlab for student learning.

In this proposal, we are requesting the funds to buy a Smart Board 885ix Interactive Whiteboard System that will be used by three instructors teaching quantitative courses in the School of Business (Kohli, Dean, and Mittal) covering between six and eight sections of BUS 275 (Applied Business Analysis) and BUS 375 (Operations Management) per semester. The SMART Board Interactive Whiteboard turns any computer and projector into a powerful teaching tool. With the computer image projected onto the whiteboard, more than one person can access and control many applications. Using digital pens and/or fingers students will be able to highlight important information and work on quantitative problems. These notes and solutions can then be saved to any Windows or Mac computer application. The demo videos of this system are available at:

http://www.youtube.com/watch?v=i0N_6XFtcnQ
http://www.youtube.com/results?search_query=smart+800+series&aq=f
Even though students can learn at their own pace using individual computers, they are limited in interaction with their peers. A smart board will allow students and instructors to use a single computer to learn quantitative concepts and software applications that are used in their respective courses. Use of such interactive technologies has been shown to enhance student learning, increase knowledge retention and provide an engaging, dynamic educational experience (Yau et al., 2003). The smart board will allow our students to be able to manipulate and solve problems in groups at the same time in the classroom. Students will also be able to play a more active role in their learning by being role models for others. It will also help increase their self-confidence by allowing them opportunities to get the skills needed to answer specific problems through peer and instructor support. Use of this technology will greatly impact student learning at multiple levels, as they will be able to enhance their understanding of the course material using multiple tools and support systems simultaneously (i.e. technology, peer feedback, instructor feedback). In terms of scope, all business majors have to take BUS 275 and BUS 375 as these are core requirements for School of Business. Hence, all students majoring in Business will have opportunity to use this technology.

In addition, we are adding Interactive Math Tools software with this system. With SMART Notebook Math Tools, instructors will no longer have to switch between multiple software applications to access the tools they need to make these quantitative courses more engaging and understandable. It centralizes the teacher’s essential math tools in one location. The software’s customizable toolbar is built into SMART Notebook software, so it is quick and simple for instructors to access and incorporate dynamic tools into their mathematical lessons. With this software, we will have an easy way to demonstrate math concepts visually and make lessons more interactive and easier to comprehend. SMART Notebook Math Tools provide us with all the tools that we need to progress through an entire mathematical concept – from lesson preparation to graphing and solving complex equations. The large selection of dynamic and intuitive tools includes an advanced equation editor, Texas Instruments™ emulator launcher, custom graph builder, shape divider, and table and graphing tools. Instructors can easily demonstrate changes and relationships in math concepts using these flexible tools. The software also offers handwriting recognition for mathematical equations. This means that instructors and students can simplify, solve, and graph handwritten equations, making SMART Notebook Math Tools ideal for use on a SMART Board™ interactive whiteboard. In short, SMART Notebook Math Tools enables teachers to represent concepts symbolically, numerically, and visually. Its comprehensive set of math tools improves engagement and retention for all students – no matter their learning style. For more details regarding **Smart Board 885ix Interactive Whiteboard System and Math Tools**, you can go to company’s website: http://smarttech.com/us/Solutions/Education+Solutions/Products+for+education/Interactive+whiteboards+and+displays/SMART+Board+interactive+whiteboards/885ix+for+education

**People, Activities, & Work Plan**

Drs. Kohli and Dean as well as Mr. Mittal from Muskie School of Public Policy (who is also an adjunct instructor for these core courses) will primarily be using this SMARTBOARD and Smart Notebook Math Tools. It is proposed that this equipment will be housed in LB 209 (preferably)/LB 410 which has a seating capacity of 35.

Use of Smart Board system along with Interactive Math Tools in instruction will result in immediate support for the students taking BUS 275 & BUS 375 once the system is bought and setup in the classroom.
Project Outcomes and Evaluation

Use of Smart Board will allow our students to get additional technology-based support which will hopefully improve their performance in these classes and successful completion in time. The following outcome will be evaluated to measure the success of this program:

- Measure if there is an improvement of students’ performance to be measured using the midterm and final quizzes as compared to prior semesters for all sections of BUS 275 and BUS 375 being offered.

Dissemination

Report of the results will be submitted to CTEL in Fall 2012. The results will also be published on the web and shared with other similar student-support programs on campus. We also hope to present our experiences and lessons learnt at a future CTEL community of practice event.

References


