How HKUST Institutionalized the PRS

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http://www.bedu.com/Newsletterarticle/hkust.html

Many in the interactive teaching community in the United States have wondered about the PRS: where it came from, what was the vision, who was behind it, how it is used in other places, and what Hong Kong has to do with it?

Actually, it's a great story and it's time it was told. Especially because the answers to all these questions are only part of the story. Even more important is the pioneering work that has been accomplished after the courageous and visionary decision of one institution to take interactive teaching "University-Wide". Fittingly enough, this ground-breaking effort came from a wonderful new institution in an old old country - China. Located in the economic heart of a new Asia, on the side of a mountain overlooking the South China Sea, is the beautiful Hong Kong University of Science and Technology (HKUST).

It was at this institution in early 1996, that Prof. Nelson Cue, Chairman of the Physics Dept., opened a package. Inside was information about the first anticipated commercial Classtalk System that would be available later that year. He watched the videotape of interactive teaching research, and was fascinated. Later he visited bE in the USA and decided to buy a system for a networked computer lab. After buying and using two more systems (including a calculator-based lecture hall system), he decided that Classtalk was a great idea but impractical for his vision. Prof. Cue's vision was too big for a hardwired specialized network and complex graphing calculators. He wanted something that would appeal not just to physicists, or even just to scientists and mathematicians. He wanted something that could be used in any discipline. Above all, it had to be simple to use, and low cost.

With a grant from the Hong Kong Government and the involvement of a high-tech HK company - Varitronix, he designed the PRS. Prof. Cue saw the need for a system that was like Classtalk, but which could be used easily in any classroom from elementary school to post graduate, in any country - even developing ones, and which would be affordable. Regular networking was too expensive, so he settled on something that was pervasive and cheap: television infrared remote control technology. He built it, and it worked - even in large lecture halls with 400 students. Now it was time for bigger things. He decided to go university-wide.

In Fall 1998, Nelson invited me to give a Seminar at HKUST. The grand experiment was just beginning. It worked like this. If they were in a class using the PRS, students could go to the university library and check out a transmitter. The library had a special station set up for this purpose that included a computer connected to an ID Changer which could personalize a transmitter with the student's unique university ID. Students were expected to carry their transmitter, which was smaller and lighter than a computer mouse, with them to classes. In participating classes, they would simply take it out, and use it to answer questions posed by the professor. Their answers (tagged by their ID) would instantly be transmitted to the teacher's computer and logged. A histogram of the class response would be plotted, and could be shown to the class (see http://www.bedu.com for more details).

Now, one and a half years later, the experiment has been a resounding success. Eight lecture halls and eleven large classrooms are "PRS ready". The system is currently being used in more than thirty courses. More than 4,000 transmitters have been issued to students. In this large-scale experiment, they find that interactive teaching works as advertized. Namely that, students pay more attention in class, there is immediate feedback and reinforcement, class understanding can be checked before going on to the next topic, test and quiz results are promptly and automatically graded, and shy and disadvantaged students become proactive. It's a great accomplishment, especially when you consider the cost.