Chapter XIX

Eight Years of Asking Questions

Jim Boyle, University of Strathclyde, Scotland

Abstract

Eight years ago, the Department decided to embark upon a radical change to its first-year teaching. A core feature of that change was the introduction of "classroom feedback systems" in large, engineering science classes, starting with ClassTalk and then moving on to the Personal Response System. This chapter gives a brief history of the reasons for this change, which involved other, complimentary, teaching, and learning strategies, our experiences, current developments, and a look to the future, in particular, the way we would like to see the technology developing.

A Brief History

The University of Strathclyde was founded in 1964 from the Royal College of Science and Technology, one of the three big "technological" universities in the UK (along with Imperial College of Science & Technology in London, and the University of Manchester Institute of Science & Technology). The Royal College was originally Anderson’s University, founded in 1796, later the Glasgow Mechanics’ Institute, and arguably, the original from which the Mechanics’ Institute Movement (and the world’s great technological universities) grew worldwide (Mechanics’ Worldwide, 2004). To this day,
Strathclyde still has the premier reputation for engineering education in Scotland, and attracts the best students. The Department of Mechanical Engineering has avoided the national UK trend of falling admissions to engineering and science, and further, the quality of the student intake is the highest in the UK. In the Scottish educational system (which is different from that of England — university courses last one year longer since students enter at a younger age) entry is based on the “Higher” Examinations, which are graded at A, B, C and so on. Minimum entry requirements to mechanical engineering are AABB, with a minimum of B in both mathematics and in physics: however, the majority of our students enter with AAAA. The Highers are taken in the fifth year of a six-year high school program, so it is possible for students to enter university directly from fifth year. In our case, around 20% do this, while the rest continue to sixth year and take “Advanced Highers” — again, most of our students will have two Advanced Highers at A or B grade, usually mathematics, physics, or technological studies. In general, the incoming student cohort each year (around 140) is, therefore, amongst the best qualified in the UK, and very motivated to succeed. Nevertheless, during the early 1990s, a worrying trend developed: over the first two years on a five-year MEng program, nearly 25% left. Further, attendance at class became poor after the first few weeks. Retention and motivation were clearly an issue and the Department decided that something had to be done.

In making this change, the Department could do so from a position of some strength. Unusually for a large, research-oriented department, there had long been a history of good pastoral care for students (a counselling scheme and a long-standing open-door policy) and an interest in innovations in teaching and learning. Various strategies, such as Keller Methods, PSI, Peer Marking, and many others (including extensive team-building exercises, Outward Bound, European & U.S. exchange programs, support for various UK engineering student team competitions, and so on) had been adopted, as appropriate, over a period of 25 years. Many of these initiatives had been led by successive Heads of Department, and there was a culture that aimed to enhance the student learning experience. Yet the retention problem remained. It became clear that most of the innovations had been introduced in later years, and that the unconscious decision had been made to just let the incoming students “settle down” and get accustomed to the University and get to know each other first. A study of the literature on student retention clearly demonstrated that this strategy was fatal. Subsequently, the decision was made to develop a strategy that tried to give the students that essential “sense of belonging,” but which also improved the learning experience.

This decision, by good fortune, coincided with an initiative from senior management in 1996 to fund a few projects in teaching and learning with technology. The writer, and colleagues, had been examining closely the educational literature to look for learning models that would both enhance the student experience, and also improve the “sense of belonging” in the difficult transition from school to university. The early use of “classroom feedback systems,” as they were known at the time, had come to our attention through the use of ClassTalk (http://www.bedu.com/) in the U.S., so a proposal was put to management to purchase a system, and further, to make extensive visits to innovative educators in the U.S. Since the other proposals across the university mostly focussed on producing CD-ROMs or building prototype course management systems for the WWW, this one caught management’s attention, and was funded.
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