

# Student Support and the Bridging Course at University College London

Interview with Robert Bowles ■ Department of Mathematics ■ University College London

Interview with Keith Ball ■ Department of Mathematics ■ University College London

## Abstract

University College London has established a wide selection of teaching resources to support a dramatic increase in the number of entrants to the Mathematics Department. This includes a diagnostic test for all entrants, a workbook for students to complete before the first semester and an integrated system of tutorials, lectures and a problem class. An intense Bridging Course also provides students with a valuable and comprehensive perspective of university mathematics.

## The Execution

During the early to mid nineties the Maths Department at University College London was faced with losing its auxiliary teaching. It was proposed that disciplines such as engineering would teach maths to their own students.

The impact of this proposal on the Maths Department was not as serious as first thought; some courses were removed, engineering in fact remained and new degree courses were started. Yet, in considering the future effects, the Maths Department decided to raise the entry standards and to take on more students. The entry requirements initially were two B's and a C; this was gradually raised to two A's and a B and many students have three A's. The effect on the intake of first year students was evident as the numbers increased between 1992 to 1994 from 40 to 120. Over recent years, the entrant numbers have increased to 140.

Extra support was set in place to maintain the standard and cope with the growing number of first year students. This includes the following:

- Peer Assisted Learning was established through the Higher Education Research and Development Unit, which is now a separate department in UCL, the Department of Education and Professional Development.
- The teaching practice within the problem class changed. Originally there were three lectures and one problem class a week; the students were given a problem sheet and no answers. During the problem class, essentially a member of staff went over the answers on the board. This practice was stopped and the answers were given out. The hour was then available for a member of staff and one or two postgraduates who do the marking, to answer questions on the work. During the problem class, which is not compulsory, the work is given out and handed in. The class is held in a big room and the students are encouraged to work together to solve the problems.
- The tutorial system, which is separate from the problem class, remains a crucial part of the support structure. There are four tutorials a week, one for each maths course. The lecture schedule for first year students consists of calculus, applied maths (standard maths and probability), algebra and analysis. Student numbers per tutorial are around six; they have an hour with the tutor to talk about the notes and/or the problem sheet. They are compulsory in that if the students miss too many they are chased up; if however they miss one they will not fail the course. The tutorials are not offered to other departments.
- A diagnostic test is given to all maths students on arrival; the marks go to the tutors. There are no remedial or top-up classes for those who fail the test.
- The Calculus Course has proven difficult for many first year students. The people who come with just a single maths A level find it very hard. To assist, a workbook is sent out to all entrants to the course, before the beginning of the first semester. Each student is required to complete all the questions. If at the beginning of the university year they are unable to do the work, students can attend extra lectures. For the first five weeks of the calculus course, an extra lecture is available at 5:00pm on every Monday. The workbook is available on an intranet.
- The Bridging Course started in 1997. The original motivation was to deal with not so much the decrease in knowledge, rather that students no longer have the experience of thinking things through for themselves. The course is offered to assist students to fill the gaps and prepare them for the way teaching is carried out at the university. Most students expect a revision course but this is not the case. Many find it extremely difficult; it is the first time they have really had to work. There is no condition of entry; internal students pay £65, and external students £85. The intake is between 70 to 80 students per course.



Each day is devoted to a particular topic; there are two lectures on that topic in the morning and then the students work on problems in groups in the afternoon. Lecturers and graduates are available to help the students, as in many cases they find the problem sessions difficult. The aim of the lectures is not so much to prepare for the afternoon problems as to present the A level work in a different way. The students learn to experiment and they soon realize that they are not going to be able to answer every question. The course presents a “mature” view of mathematics and how everything is related; there are no recipes, there are only tools. There is a test at the beginning and at the end of the course; the mark is not forwarded to the tutors.

## What Support Was Needed?

- There is no official co-ordinator.
- The Bridging Course is run separately from the lecture programme.
- Postgraduate students mark the problem sheets and help in the problem class.
- Six postgraduate students are selected to assist on the Bridging Course.
- Mathematica is available.
- Some lecture notes are also available on the web.

## The Barriers

- Integrated within the course system so there are no actual overall barriers.
- Finding staff time to teach and participate in the support schemes.

## The Enablers

Changed the name of the course from Top-Up to Bridging Course and the number of applications increased.

## How Can Other Academics Reproduce This?

- Establish a tutorial system.
- Dedicated staff.
- Bridging Course is funded by the students and topped up by the university.
- An enthusiastic tutor to run the Bridging Course.
- Peer Assisted Learning (PAL) requires expertise and funding.

## Quality Assurance

There is standard Quality Assurance for the courses and the PAL Sessions.