Tutoring in Economic Statistics : The Monash Experience

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1.   Introduction

The Faculty of Economics, Commerce and Management at Monash University requires all its first-year students enrolled for the Bachelor of Economics degree to complete a compulsory two-semester course in economic/business statistics. A complication is that the Faculty does not currently have a mathematics prerequisite for students entering its BEc programme. The Department of Econometrics teaches the course in two streams - Sequence I for students with final-year high school mathematics and Sequence II for students with a limited mathematical background. Formal teaching consists of two one-hour lectures and one two-hour tutorial per week. Total enrolment is typically around 740 students. The vast majority in both sequences attend the popular morning lecture times which have class sizes in the range 200-350. Physical constraints imposed by the size of tutorial rooms and the number of computer terminals/PCs in the computer laboratories have kept tutorial class sizes to an average of 15 students.

The large number of students, together with the small tutorial class-size, creates the need for a large number of tutors. Here the Department faces another constraint - the salaries the university requires it to pay its tutors are not competitive. Starting salaries paid by the private sector in Melbourne for econometrics honours graduates are typically at least forty percent above and occasionally almost double a tutor's starting salary. A tutor's position is only really attractive to someone who wishes to pursue a higher degree.

Fortunately, the Department has a large number of full-time post-graduate students who are only too willing to take up part-time tutoring positions. As at April 30, 1990, the Department had 9 full-time PhD students and 8 full-time MEc students. Indeed, the very availability of tutoring positions has been a significant factor in the recent increase in post-graduate student numbers in the Department. Such positions are

attractive for the financial assistance they bring and also because they provide many students with the first step in an academic career. There are a number of factors associated with employing post-graduate students as tutors that contribute to increased heterogeneity across tutorials. Some of these are:

(i)   Very few post-graduates, if any, have had any formal training in teaching.
(ii)   For many, this is their first teaching experience
(iii)   Most typically take up the tutoring position for between one and three years.
(iv)   For some, their primary concern is their thesis research so that teaching is of secondary importance.
(v)   More than half are from overseas and therefore have a different cultural and language background from that of their students.

At least three-quarters of the students enrolled for the BEc are training to enter the accounting profession. The degree is viewed by many as a foundation degree for students who aspire to eventually fill managerial positions. There are, of course, good reasons why such students should complete a two-semester course in statistics, particularly in the Australian context. Today's managers operate in a world that is increasingly deregulated, uncertain, instantaneous, competitive, data-rich and computer rich. In this environment, statistics is a highly relevant tool that has a special role in decision support. The concepts of variation, randomness and probability are therefore crucial. For example, an important part of the managerial process is to monitor a variety of time-series and take appropriate action based on their values. To be successful, therefore, the course must introduce the student to the idea of statistical thinking.

From the Department's point of view, the course provides an opportunity to demonstrate to students the relevance and importance of quantitative methods in economics and business. An interesting and well-taught course is likely to encourage the better students to go on to second- and third-year quantitative units. Given that the tutorial accounts for half of the students' contact time, successful tutorial sessions are vital for a successful course.

2.   First steps

Obviously, in order to know how to improve our tutorials, we needed data on current tutorial performance. A decision was made to survey, at the end of each semester, student opinion of all classes conducted by the Department. A questionnaire was designed to obtain student opinion on various aspects of their tutorials. Questions on tutors' preparedness for classes, approachability, knowledge of the subject, spoken English, ability to explain concepts and enthusiasm for the subject were among those asked. At the end of first semester, every student attending a tutorial was asked to complete the questionnaire. Despite a serious public transport strike on one of the days that the questionnaire was administered, a response rate of over eighty per cent was obtained.

Each question was put in the form of a statement with which students were asked if they strongly agreed, agreed, were neutral, disagreed or strongly disagreed. Answers were given a numerical value from one to five, respectively. This allowed responses for

each tutorial group to be averaged. The means and standard deviations of these average tutorial responses were calculated for all tutorials conducted by the Department and then for all tutorials within the same course.

The main conclusion drawn from the survey was that there was a high degree of variability in the performance of tutors. A number of tutors were perceived by their students as doing an excellent job. Others were struggling to make the subject relevant and interesting - a common complaint being that tutorials were too long and boring. It was clear that there was considerable room for improvement.

Initially, the Chairman of the Department discussed the survey results with each tutor individually. Particular notice was taken of tutorial averages more than two standard deviations from the course mean. Congratulations were offered to those whose performance was significantly above the mean, while suggestions for improvement were given to tutors whose performance, as viewed by their students, was significantly below the mean. In these discussions it became very clear that the tutors as a group held a wealth of information about what works and what does not work in the tutorial room.

3.   The workshop

It seemed obvious that if this information could be shared by all tutors, the overall effectiveness of the Department's tutorials could be improved. It therefore was decided to conduct a half-day workshop for tutors. Five tutors, who were identified by the survey as being successful, were each invited to speak, together with an expert on tutoring from the Higher Education Advisory and Research Unit at Monash University. Their brief was to discuss their approach to tutoring and if possible provide others with suggestions for improvement. The six presentations were followed by a round-table discussion.

In an attempt to identify what makes an effective teacher/tutor, the workshop discussed the work of Hildebrand, Wilson and Dienst (1971) (also see Hildebrand, 1973). Through extensive surveying of students and teaching staff at the Davis campus of the University of California, Hildebrand et al. established 85 aspects or characteristics of teaching performance, each of which allowed discrimination of best from worst teachers as perceived by the students. They also established 55 such characteristics that allowed discrimination of best from worst as perceived by the teaching staff surveyed. Factor analysis led to the conclusion that these characteristics fall into five clusters which can be summarised as follows:

(1)   command of the subject;
(2)   ability to present material clearly and in an organised fashion;
(3)   rapport with class; skill in controlling group interaction and participation;
(4)   interaction with individual students;
(5)   enthusiasm for the subject.

It was noted that (3), (4) and (5) are human qualities that new tutors in particular see as rather peripheral to being an effective tutor. A related finding is that students are motivated to learn when they are comfortable in their relationship with their teachers. By making this relationship comfortable, tutors help set up a feedback mechanism

which is absolutely vital to the process of tutoring. If this feedback mechanism is absent, the tutorial might just as well be a lecture.

Participants at the workshop came up with the following suggestions for improving the teacher-student relationship and encouraging feedback.

(i)   At the commencement of the first tutorial, the tutor should ask everyone to introduce themselves to the class and say something about their background. The tutor should begin this process by introducing himself or herself.

(ii)   Tutors should take the trouble to learn their students' names as early as possible. Photographs of students are a useful aid.

(iii)   Tutors should always treat their students as they would wish to be treated if they were students.

(iv)   Tutors should aim to create an atmosphere in which students feel they can ask questions without hesitating. Questioners should not be made to feel embarrassed no matter how stupid a question might seem. Class discussion is to be encouraged.

(v)   Tutors should be approachable both in and outside the tutorial. Often students may be willing to forgive or overlook some of the weaker points of a tutor's performance if he or she is approachable. They should also show their human side by occasionally talking about personal experiences.

(vi)   Wit and humour should be used where possible.

(vii)   Tutors should spend some time discussing current issues that relate to statistics. Students want to relate what they are being taught to the outside world. When they see the relevance of statistics, they tend to be more interested in the subject.

(viii)   Tutors should be prepared to change their plans in a tutorial if they see something is not working. Boredom is the enemy.

(ix)   The importance of tutorials should be stressed to students. At Monash, tutors' opinions are taken into account when deciding the final grades of borderline students.

While most of the discussion concerned characteristics (3), (4) and (5) identified by the Hildebrand et al. study, some speakers did address (2) which concerns the presentation of material. One interesting suggestion involved the presentation of calculations on the blackboard using coloured chalk. It can be very helpful to students if the data for some calculations are written in (say) white while one colour is used to write the first formula and the calculated result(s) from that formula, a second colour is used for the second formula and its calculated result(s) and so on. After the workshop, some tutors did indicate they would have liked more discussion on the presentation of material.

4.   Concluding remarks

From the discussion in the Department following the workshop, it was evident the workshop was extremely successful. Tutors who had been doing an excellent job had that fact publicly acknowledged. Those who had been struggling were given new ideas and a new sense of direction. Those who took their tutoring duties less seriously than their colleagues found that the Department was concerned about their performance.

Senior members of the teaching staff appreciated the fact that time had been set aside to discuss something that had exercised their minds for many years, namely teaching. A similar half-day workshop was held seven months later at the beginning of the next academic year with the view to helping new tutors and passing on the lessons of the first workshop to those who had missed it. We could have dispensed with the workshop and given new tutors a handout summarising the deliberations of the earlier forum. However, the workshop approach was chosen because it was felt tutors were more likely to adopt new ideas and suggestions that had been debated and discussed in a workshop forum.

The benefits of the whole experience are plain to see. This year there have been far fewer requests from students to change tutorials because they do not like their tutor. Tutors, particularly new tutors, have a greater air of confidence than in the past. Many of the points outlined in Section 3 may seem trivial to an experienced teacher, but to an inexperienced tutor they may be invaluable.

Without claiming that it is a substitute for formal teacher training, we recommend our approach of holding tutors' workshops. We feel it works best when there is a relatively large audience of say about twenty and an outside expert on tutoring is invited to lead the discussion. For departments with small numbers of tutors, it may be advantageous to hold such workshops jointly with similar departments from other institutions.

References

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