

Mathematics and Statistics Learning

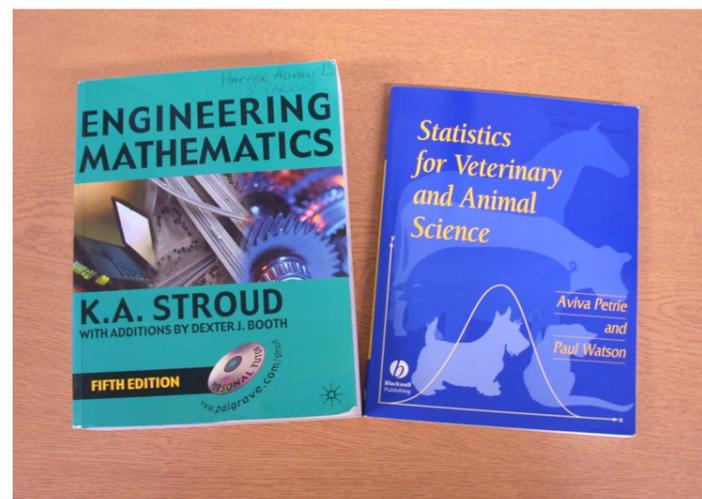
Aspire Development Fellowship 2005/6

Aim

To better understand student experiences learning mathematics and statistics, and to provide additional resources.

Work Undertaken

- **Research** 500+ students were surveyed by questionnaire after mathematics and statistics modules in 2005 & 2006. Research under supervision of Loughborough University.
- Production of **Statistics Booklets**.
- Mathematics **Support Workshops** for other numerical modules.



Impact to Date

Research Findings

- Engineering students had medium confidence and understood '*Maths is necessary*' for Engineering.
- Natural and Social Science students studied statistics more reluctantly, but showed better motivation as their understanding of the usefulness of the subject increased in the second year.
- Students' past mathematics qualifications and student confidence were found to have significant relations with performance at university in mathematics and statistics.
- Various features of teaching helped students' learning including: doing examples, mathematics support, provision of handouts, and use of computers for learning statistics.
- Mathematics Support provided a value added measure, being used by and improving the performance of students with lower mathematics qualifications.

Statistics Resources

- 6 leaflets were produced:
 - ANOVA Glossary
 - ANOVA - Single Factor ANOVA Example
 - ANOVA - Factorial ANOVA Example
 - ANOVA - Dose Response ANOVA Example
 - T-test Notes
 - Chi Squared Test Notes.
- Leaflets have been made available to students in paper and electronic forms.
- Leaflets were used by students for private study, in mathematics support for individuals and groups, and as recommended reading by module lecturers.
- Positive feedback has been received from a range of students and staff.



Workshops

- Additional workshops were run in 2005 and 2006 for numerical subjects, including: Surveying Valuation calculations, Economics Elasticity calculations, Vet Nursing Drug Dose calculations and Statistics.
- Positive feedback was obtained. Course managers and teaching staff noted an improvement in student achievement and confidence.

Lessons Learnt

- To stress the usefulness, relevance and importance of the mathematics and statistics to students.
- To maximise opportunities for students to do the mathematics/statistics by all and various means.
- To provide student handouts, including a selection of worked examples.
- To allow sufficient time and correct pace for students to think during lectures.
- To encourage students to seek help/mathematics support as early as possible.
- To include use of computer packages, especially for learning statistics.

Sarah Parsons, Senior Lecturer and Mathematics Support Tutor, sjparsons@harper-adams.ac.uk