

Paper-based Test

Coventry University

Interview with Duncan Lawson ■ School of Mathematical and Information Sciences
Contribution from John Danks ■ School of Engineering

Abstract

Diagnostic testing at Coventry University encompasses various disciplines. Co-ordinated by the Maths Support Centre, the test is used to assess the students' ability and target appropriate mathematics support as early as possible. This case study reviews the testing process and how it is linked to appropriate support material, advice and learning resources.

The Execution

The mathematics department at the University of Coventry has carried out a comprehensive diagnostic test since 1991. During the first week of the academic year, 600-700 entrants to a range of science and engineering degrees and also to courses in the Business School and the School of Art and Design sit one of the Mathematics Support Centre Diagnostic Tests. There are two tests: one aimed for students on courses with an A-Level in mathematics (or equivalent) entry requirement and the other for students on courses with a GCSE mathematics entry requirement.

The Maths Support Centre, also established in 1991, manages the procedure but the tests are administered by staff of each of the various participating disciplines. The test is timetabled and takes place in the host department.

Engineering students were observed in a large classroom: each was handed an OMR (Optical Mark Reader) answer sheet and a booklet containing fifty questions. A set of instructions was presented on page one. The student was asked to use an HB pencil to complete the answer sheet; this was necessary for the "marking machine" to recognise the selected answer. In this instance, a calculator was not allowed. It was also stated that the results of the test would not be used for assessment purposes. They would be analysed and a computer printout would be given to each student indicating either satisfactory performance or areas where extra work was advisable.

Upon completion of the test, the staff member attending collected the booklets and answer sheets and returned them to the Maths Support Centre. The centre carried out the processing, and the results were given back at the end of induction week.

The Results

As part of the induction program, students have a half-hour visit scheduled to the support centre. During this time, they are informed of the help that is available, shown the various handouts and how to access the centre website. They are also given back their own diagnosis from the test. The printouts they receive list seven topics and their performance within each.

It is hoped that receiving the results in this manner will help the students to appreciate that the diagnostic test is part of a package, which includes ongoing student support. Students can return to the Maths Support Centre for help from staff or by using the materials available. Special revision classes are also scheduled.

The Barriers

Around ten percent of the OMR sheets cannot be automatically processed. The problem is invariably because the students do not read the instructions. The most common mistake is not properly rubbing out a marked answer when the student

changes their selection. In addition, some start doing the test in pen and not in pencil. In this instance, the technician has to copy the results of the test, i.e. make a duplicate with a pencil.

The Enablers

- The test has been running for 12 years. Today, the procedures require limited administrative co-ordination.
- The ongoing collaboration and liaison with the host disciplines has in turn created more credibility for the mathematics department.

How Can Other Academics Reproduce This?

The diagnostic procedure is based not only on the test, but the follow-up support via the maths centre and the links to the host disciplines. Interested institutions need to be aware that setting up this structure is a gradual process

The diagnostic testing began when the Maths Support Centre was opened, with the initial focus being on engineering students. During the previous two years the mathematics department had noted that failure rates were high on certain modules. As a result, they started to identify courses where students were at risk. Diagnostic testing was initially carried out only with students on these courses. However, as a larger number of courses have taken students from a wide range of backgrounds, and as A-Levels have changed, the number of courses using the diagnostic test has increased to the point where virtually all courses with a compulsory mathematics component are involved.

The Maths Support Centre was established with funding from BP. This funding allowed the Centre to employ a full-time manager for three years. The manager co-ordinated and liaised with the various departments. This role was crucial in setting up the diagnostic test across the disciplines and the system as it is today.

Two years ago the university agreed to fund the centre, and this funding was used to employ someone to co-ordinate the test at the beginning of each academic year. This role is important in co-ordinating the test and maintaining the relationship between all participating departments.

References

University Mathematics Support Centres: Help for Struggling Students, in *Applications of Mathematics in Engineering and Economics*, pp 686 – 692, Eds: Ivanchev, D. and Todorov, M. D. Lawson, D. A. and Reed, J. (2002), (ISBN 854-580-115-8), Heron.

Maths Support Centre web-site
http://www.mis.coventry.ac.uk/maths_centre/
For further information please contact Duncan Lawson at d.lawson@coventry.ac.uk