

Diagnostic Testing within Institutions

Paper-based Test

Cardiff University

Interview with Allan Coughlin ■ Cardiff School of Engineering

Abstract

All students are assessed using a paper-based, but optically marked, written test of 12 multi-choice questions (MCQs). The test covers algebraic simplification, approximation, logs, trigonometry and calculus. It is based on a test developed at Coventry University. It is used to assess students' strengths upon entry.

The Execution

The test was carried out in week 1 of the students' course, and took place simultaneously in two large lecture theatres. The test was invigilated and students were also asked to fill in a questionnaire survey on their attitudes to mathematics. The 12 questions covered basic algebra, logs, integration, differentiation, trigonometry and approximation. The tests were marked using an optical reader and results were reported back to students by their personal tutors. Most students do not use all the time available (nominally 50 minutes).

The Results

The results of students are fed back to their personal tutors and support classes are provided. These are based on students' degree programmes. This support is not directly linked to teaching but is part of general tutorial support.

There is perceived to have been a drop in standards over the last few years. One feature that has changed is the drift of students from pure mathematics and mechanics to pure mathematics and statistics. Other deficiencies noticed have been algebra, elementary calculus, trigonometry and complex numbers. Overall teaching has been modified to make course material more accessible to the students. This applies to mathematics material in all four years of the degree. Informal support has become formalised through a specific 'support hour' sessions in small groups (~20 students).



The Barriers

There were no serious barriers in the conducting of this kind of test. The only possible technical problem might be the optical scanning of mark sheets when students do not follow the instructions they are given.

The Enablers

Some of the help provided to students is limited in access. Records of attendance at lectures and the like are kept. A 70% attendance record is required for a student to be given access to the small group support. This encourages students to take advantage of the primary means of instruction in the department.

Quality Assurance

The appropriate professional bodies accredit all Engineering degrees. This means that external assessment/validation is in place. The tests are based on those developed by Duncan Lawson at Coventry University who is a QAA Subject Specialist Reviewer in Mathematics, and a Member of the Open Learning Foundation Mathematics Working Group (see Coventry University, p19).

Other Recommendations

Monitoring of student attendance, and restricting access to resources if attendance is poor, encourages students to take advantage of their opportunities at the time most beneficial to themselves.