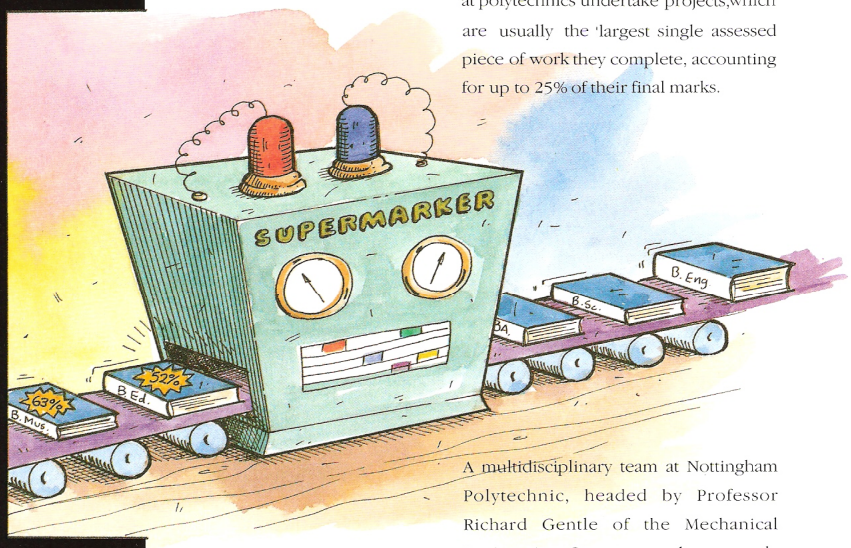
LEARNING TECHNOLOGIES

THESYS

A COMPUTER SOLUTION TO THE PROBLEM OF PROJECT ASSESSMENT

Most higher education establishments pay insufficient attention to the assessment of final-year undergraduate projects. This is surprising, because something like 80% of degree students at polytechnics undertake projects,which are usually the 'largest single assessed piece of work they complete, accounting for up to 25% of their final marks.



A multidisciplinary team at Nottingham Polytechnic, headed by Professor Richard Gentle of the Mechanical Engineering Department, has recently developed a computer package to standardise the assessment procedure for students and supervisors in any subject area. The work was funded by the Employment Department.

The Nature Of The Problem

At the time of initiating the programme, there was little formal advice available on how to carry out or assess projects. The Council for National Academic Awards (CNAA) had produced a report giving informal guidelines on the management and assessment of computing projects, but this had been neither widely recognised nor adopted. On the supervisory side, experienced lecturers had traditionally been reticent in passing on their experience to others, probably for fear of interference.

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LEARNING TECHNOLOGIES CASE STUDY

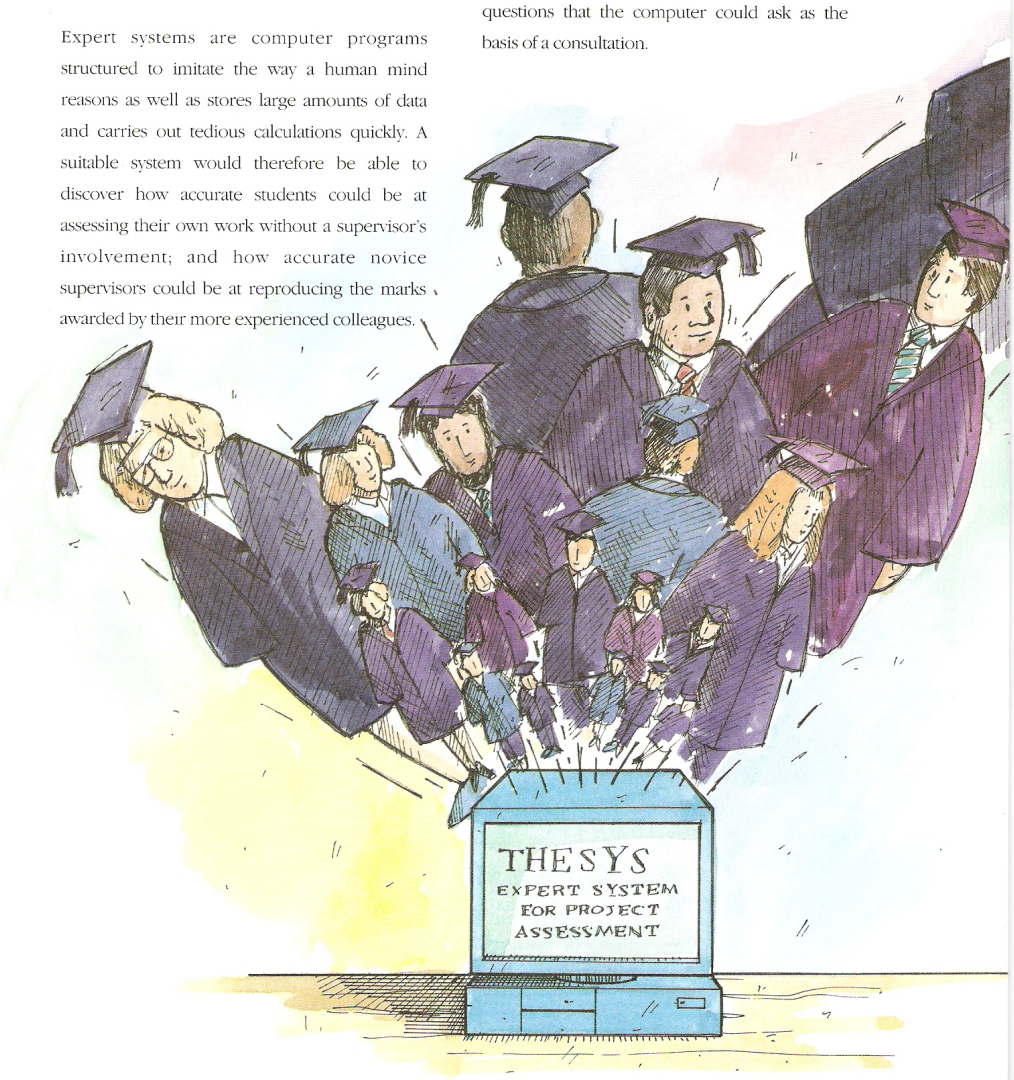
The problem for the team was therefore how to put together in an accessible format:

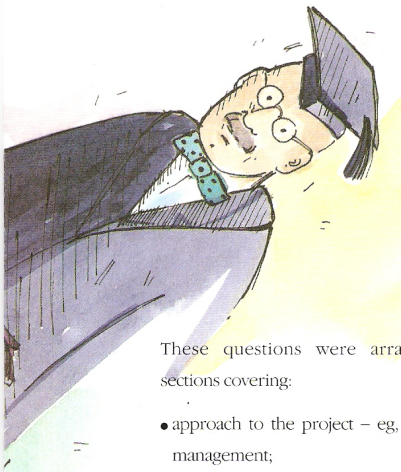
- a set of formal criteria on projects;
- a body of expertise gleaned from experienced lecturing staff. The answer was a computer based expert system.

Expert systems are computer programs structured to imitate the way a human mind reasons as well as stores large amounts of data and carries out tedious calculations quickly. A suitable system would therefore be able to discover how accurate students could be at assessing their own work without a supervisor's involvement; and how accurate novice supervisors could be at reproducing the marks awarded by their more experienced colleagues.

Developing a Suitable System

The set of rules required by the expert system were based on the guidelines developed by the CNAA, which had proved to be suitable for almost any kind of degree course. It was a simple matter to reformulate them as a series of 38 questions that the computer could ask as the basis of a consultation.





These questions were arranged in four sections covering:

- approach to the project – eg, effort and time management;
- quality of the day-to-day work;
- quality of the description of the work;
- quality of presentation.

However, the CNAA report made no indication of the weighting to be given to the assessment of each aspect of project work. The team therefore decided to collate the opinions of course leaders and project tutors from large and well established degree courses.

Surprisingly, these were almost unanimous in the ranking given to the 38 points covered by the system's questions. Such things as effort, problem solving, and time management were common features, along with the more predictable virtues of academic ability and good presentation.

This made it possible to produce a single assessment analysis method.

The final stage was to ensure that the project marks produced by the system would be in line with those awarded in previous years. A statistical analysis of the last three years was carried out, allowing the team to match the system's marks with the 'going rate' in terms of means and standard deviations.

The Outcome

The interactive software package that resulted, called THESYS, enables users to work through the system at their own pace. It comes in two versions. One is for students' self-assessment, so they can predict their likely final mark and find ways of improving it. The other is for staff, particularly novice supervisors, and offers positive guidance and realistic examples. This version provides a printed report of individual strengths and weaknesses, enabling the supervisor to produce a written assessment quite rapidly.

Both versions have been warmly welcomed. Experienced supervisors have found a close match between the marks awarded by conventional methods and those recommended by THESYS.

THESYS is now available to universities, polytechnics and other CNAA institutions looking for better training of staff and students in the growing area of project activity. It is capable of running on all IBM compatibles with VGA/EGA graphics and at least 640k memory.