

## Student-led appraisal of marks

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Student progression through an academic year is often full of questions regarding the relative level of achievement in continuous appraisal compared with end-of-year exams. In-course assessment marks are distributed to students during the year but many students do not know how their performance in the in-course assessment affects the score required to pass the year.

In line with future curriculum developments that will allow students to include or exclude in-course assessment marks in their final examination score, we have developed an innovative new system to enable students to not only view their continuous assessment marks for the entire year on the web, but also to see how these marks contribute to their final exam grades. This will indicate how many marks must be potentially attained in their final exam to pass. Areas of weakness are clearly visible and the effect these weaknesses have on the overall outcome will be shown.

The student-led appraisal of marks (SLAM) system is currently being used for the 2nd year Medical Neuroscience course. Students can view their marks for timed essays, spot tests, tutorial attendance and practical assessments on-line. Using an active server page interface to a relational database backend running on Internet Information Services, students log in to the system using their email address and candidate number. In-course assessment marks are added to the database as they are released, allowing a cumulative total of marks to be viewed throughout the year. By the time the students are revising for their end-of-year exams their grade record for the whole year is available on-line.

The weightings of these in-course assessment marks are taken into account when the system calculates what percentage the student must score in their final exam to attain a pass, merit or distinction. Assessment titles are displayed along with the maximum mark attainable as well as the marks that the student has obtained for each one. When these marks are passed through the calculation algorithm the percentages that must be achieved in the final exam are shown for the different grade levels. Individual assessment marks may be de-selected, meaning that they are not included in the grade calculations. The effect of including each unit in the final assessment can be seen.

Over 900 'hits' on the system have been made by 2nd year medical students (350 students), indicating multiple repeat visitors. Although this system is currently running on an informative basis at the moment, it is hoped that in the future, students will actively use this system to determine which in-course assessment marks to include or exclude before final examinations are taken and to register these preferences on-line.

## Computerised adaptive testing: results of a trial at King's College London

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At King's College London the medical year 1 Cardiovascular and Respiratory System (CVR) course is largely assessed using linear examinations. The computerised adaptive testing (CAT) project aims to explore the possibility of turning these tests into online adaptive tests. The power behind adaptive testing is item response theory; each question or 'item' is analysed by psychometric software using accumulated past exam responses and consequently provides each item with separate parameters of difficulty, discrimination and pseudo-guess. An adaptive test uses these parameters to 'tailor' an exam to the ability of each candidate. Only a relatively small number of organisations are actively using CAT for high stakes exams, mostly on a large-scale continuous testing basis (e.g. National Council of State Boards of Nursing).

The first step towards evaluating the feasibility of implementing CAT exams was to purchase an online testing programme and after research, a software package called Quiz Studio was purchased. As the CVR exams have been optically marked for the past 3 years we have computerised responses for all the items in the bank. To establish parameters for each item these responses need to be calibrated. Quiz Studio has calibrated 57 items and we are now using a psychometric software solution (Xcalibre) to calibrate the remaining item bank. For Xcalibre to read the data, approximately 350 000 responses have been converted into a specific text format. A database (item bank) of 950 previous exam questions has been created and sorted according to set categories.

Previous exams have been made available online to the students using Quiz Studio, partly for revision purposes but mainly as an evaluation exercise. Online feedback forms returned 80 completed responses. The students who used Quiz Studio for revision purposes returned positive feedback. Of the survey responses collected, 80% said the system was useful for learning, 79% said they would use the system again and 80% said they would like similar systems applied to other courses.

Implementing a CAT exam requires extensive preparation and is pivotal on having a large calibrated item bank. If exams move to being online, then sufficient data are collected, items can be calibrated by Quiz Studio. For the moment data will continue to be calibrated using data from the optical marker. Validation is an important consideration and careful planning will be needed to construct a starting point for the integration of this method. A useful by-product of this project is the production of a large calibrated item bank of CVR questions that will be used to provide questions for future linear tests. For further information see:

[www.kcl.ac.uk/teares/gktvc/vc/CAT/](http://www.kcl.ac.uk/teares/gktvc/vc/CAT/)

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**Course evaluation forms on-line (CEFOL): a pilot study at King's College London**

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Course evaluation is central to the requirements of both the Quality Assurance Agency and the General Medical Council to foster and encourage course improvement. At King's College London we use a combination of bespoke web forms designed by technical staff and optically marked paper forms to collect course evaluation data. Traditional paper-based evaluation forms are costly to produce and time consuming to collate and analyse. The web is an ideal medium for the collection and analysis of data, especially with increasing student intakes across the UK higher education sector. Designing web forms, however, is time consuming and requires a level of technical expertise.

We have designed a web-based user-friendly interface that allows course tutors and administrative staff to design course evaluation and feedback forms that automatically collect and collate results. The interface consists of a web-based form builder, style tools and results display. The system, once installed on a central web server, runs in current web browsers without the need for third-party software or support. No prior knowledge of web-authoring or web-form processing is required. Based on a Microsoft Access database and Internet Information Services (IIS) web server interface, the form is generated by entering the questions and question format using drop-down menus. Common question formats are provided: radio buttons using a standard Likert scale, short answer, free text and yes/no/don't know. The staff member designing the questionnaire can use pre-defined styles or change colours and font sizes by using styling tools. Results are collected in a database and after a pre-determined deadline has been reached, can be accessed via a web display page. The analysed data includes the number of responses, percentage spread, average mean and standard deviation. Full results, including free text comments, can be downloaded into any standard spreadsheet software for further analysis if required.

The project has been successfully piloted within the medical and dental courses for end-of-year course evaluation. The system has also been used for the collection of dental clinical feedback and *ad hoc* questionnaires. To date, ten forms have been created using the system, there have been 1212 evaluation form submissions from students, and 53 684 individual results have been collected and processed automatically. The system will be available to other Schools in the College and, if further funding is obtained, to other institutions. Future developments will include restricting submissions to one per questionnee for non-anonymous submissions and increased statistical and graphical display of collated results. CEFOL can be viewed at:

[www.kcl.ac.uk/teares/gktvc/vc/CEFOL/](http://www.kcl.ac.uk/teares/gktvc/vc/CEFOL/)