

Seminar in eAssessment in Mathematics

eAA

Swansea University, 13 July 2009

Computer Based Assessments:

School of Maths & Stats

Newcastle University

Why CBA?

What Happened?

Developments.

Why Change?

Why?: Stage 1 modules and in-course assessments(ICA)

- Postgraduate marking of ICA
 - Expensive
 - Variable in quality
 - Monitoring of students needed improving
- More practice in basic skills needed
- Decided on CBA – biased towards formative assessment
- 6 modules, 4 CBAs each per semester

Why?: Service Teaching

- Maths & Stats Depts can be under threat of losing service teaching.
- Need to supply new initiatives.
- Must give increased service – continuous assessment and monitoring is essential.
- Have to be seen by the university as innovators supplying value for money (ftes)
- (Even then may still lose the teaching!)

Why?: Other Uses

- Transition.
 - Adapting to changing school/college qualifications e.g. Diplomas.
 - Outreach activities: local schools and colleges
- Retention.
 - Supplying extra practice and feedback at crucial times.
- Recruitment.
 - Developing alternative routes into university using distributed entrance exams

What Happened?: The System

- Decided on a system where we had potentially some influence over the development and had good information on its present functionality.
- Decided on i-assess, derived from CALM. Developed initially at Heriot-Watt
- The School put its whole weight behind the development and set up a project team together with a coordinating committee.
 - Background: Keeping control using using computer aided assessment: <http://www.mathstore.ac.uk/articles/maths-caa-series/dec2004>
 - Report: Using computer based assessment in first year mathematics and statistics degree courses at Newcastle University: http://mathstore.ac.uk/headocs/Foster_B.pdf

What Happened?: The CBAs

- Each exam had a practice exam (available for 2 weeks before the deadline; changed to one week in 2008/2009). Students could do this as many times as they liked (randomised).
- Each exam proper was available for one week before the deadline – only one attempt allowed.
- 4 CBAs counted in total 10% per module.
- Available from all University cluster machines (1500) or by remote access.

What Happened?: 2006/2007

- First year Director of Studies Maths and Stats (Prof Robin Johnson) reports on the use of CBAs
- *1. The number of students that we have had to 'chase up' is about 1/4 to 1/3 of the numbers in previous years (about 10 students out of 190 this year).*
- *2. The number of students who have attempted some of the in course assessment is close to 100%, most notably in the CBAs; in previous years, it was not unusual to have 20 or more students (out of about 150) doing virtually nothing.*
- *3. It appears that the overall failure rate is much reduced from previous years.*
- *4. The students would seem to value and enjoy the CBAs.*
- Commended at Internal Review of School of Maths and Stats.
- More efficient use of available PG time in helping retention (from marking to tutoring)

What Happened?: 2006-2009

- Now firmly embedded as part of ICA for first and second year modules.
- Used in several large service courses e.g. service stats course to [Business Students](#) et al (600 students)

http://mathstore.gla.ac.uk/headocs/8345_fawcett_l_cbastats.pdf

- Feedback from students excellent.
- No problems in using for non-maths students.
- Success has lead to extensions to transition and recruitment.

What happened?: Usage

- 2006/2007
 - 24,000 student sessions.
 - About 22 mins per session
 - 4 attempts per assessment
- 2007/2008
 - 59,000 student sessions. Other data similar.
- 2008/2009 (Policy change: no practice during assessment week)
 - 44,000 student sessions
 - About 30 mins per session
 - 3 attempts per assessment.
 - 3,000 students using the system across all faculties.

What Happened?: Changes

- New version of examiner: 2007/2008
- Became a service on the intranet: 2007/2008
- Extension to Stage 2: 2007/2008
- Spread out to service courses: 2007/2008
- Used as diagnostic test for medics: 2007/2008
- Cut down on practice time: 2008/2009
- Used as refresher tests Stages 2,3:2008/2009
- Move to make some assessments harder: 2008/2009 and next year (forgetting original decision)

Developments: Recruitment

- Developing alternative routes into university
- Use of CBAs and on-line testing
- Creation of DVDs with course material including CBAs and videos aimed at specific groups
- [Example](#)

Developments: Transition and Retention

- Project working with local schools
- Set up external accounts.
 - A level (years 12 and 13) support and revision
 - Transition into Newcastle
- Exploiting new version of iassess with plug-ins.
- Development of DVDs including CBAs for revision and support
- Authoring outside the university using templates (e.g. by teachers).

Why Change?: Stability or Inertia

- Once a School, College or Maths & Stats Dept or institution is using a tool which is stable i.e. works and delivers then why change?
- **Possible Reasons for Change**
- Significant local control and influence over development where needed.
- Better support available from developers/owners of the tool.
- Better authoring and functionality which leads to a significant improvement in delivery, feedback and consequent student experience.

Why Change?: Reasons (contd)

- Significantly lower initial cost and running costs.
- An established pool or community of users of the new tool giving opportunities to share resources and problems with others.
- And most importantly(!) the support of local IT in changing from one system to another.

Why Change?: Stack and Moodle

- We have a successful commercial CBA system, i-assess, at Newcastle with an increasing number of students using it from all disciplines. Other institutions are in a similar position with other systems.
- We would like more control and in theory Stack/Moodle gives this— but this is tempered by experience of trialling the system. We would need strong reasons for changing, see previous slide.
- However, we are very interested in the opportunities that Stack/Moodle can give and would like to explore these in more depth and arrive at a decision based upon more information on future developments and systematic support of both Stack and Moodle.

Why Change?: Present Situation

- Newcastle Team testing Stack/Moodle.
- Installed Stack and Moodle after some difficulty
- Ran into problems with Moodle/Stack interface
- [Pilot project](#)
- Depends upon getting a clear idea of the next stages of development and a robust timetable.

Why Change?: Our requirements for Stack/Moodle

- The present development should be under control following a commercial pattern i.e.
- A stable fully tested version should be the primary aim with a clear, costed, transparent and financed development plan following.
- As the use will be in sensitive areas of support and assessment in semester based modules there has to be thorough, dependable and timely core support.
- A commercial environment in terms of a support and upgrade contract. This should pay for the core support.