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'Problem' Subject?

Reconsider your approach to Computer Based Assessment:

A case study in Business Modelling

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What makes a subject a problem? (Warwick and Ottewell, 2004)	Data Analysis within Business Courses
Core component in the curriculum	Yes
Students perceive the subject as more difficult than other subjects	Yes
Students dismiss content as irrelevant	Yes
Prior student experience may have an adverse impact on perceptions	Yes results in student fear or nervousness of ability
Studied by large numbers from diverse backgrounds	Yes including those where English is a second language
Policies reduce contact time	Yes to around 10% of notional student workload
Subject paradigm differs to other paradigms within the subject	Yes

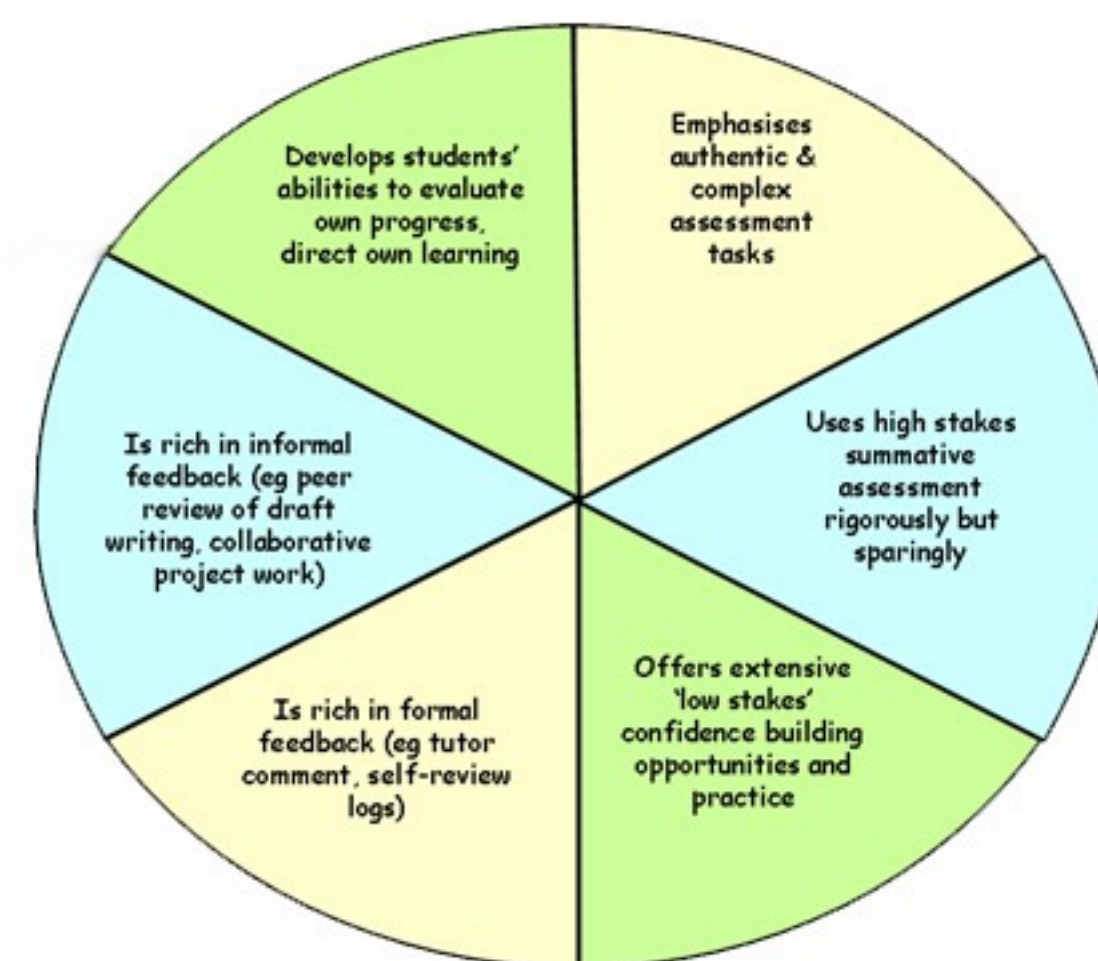
How can assessment be made both efficient and effective?

Computer-aided assessment stands out as the most cited practical and strategic solution (Harvey and Moge, 1999)

- Large student numbers 800+
- Could be set up to allow for 'slow' learning (Rust, 2002)
- Suitable bridge between formative and summative (Bull and McKenna, 2004)
- Feedback is required within "minutes" to be most effective (Cowan, 2003)
- Anonymity, formative purpose timeliness crucial factors (Weaver, 2003)

Assessment for Learning?

- Assessment has a "profound influence" on quality and quantity of engagement with student learning tasks - Gibbs and Simpson (2004-5)
- Assessment is not only what students regard as important but often takes centre stage in the management of their time - Brown (2001)
- In order for assessment to be at its most effective it should provide a powerful formative function and reduce the domination of the summative function - McDowell et al. (2005)
- Continuous assessment as less anxiety provoking system. IF! non-threatening, give a realistic workload, help pace student learning yet allow for 'slow' learning and includes plenty of regular formative feedback - (Rust 2002)



Assessment for Learning Six Conditions

Blackboard VLE was introduced at Northumbria University in February 2001. Author carefully designed a number of "formative self-tests" using question formats such as multiple answer, fill-in-the-blank, matching etc. to ensure coverage of high-order understanding in data analysis curriculum. These tests became the foundational elements in investigating two computer-based assessment strategies (over two student cohorts).

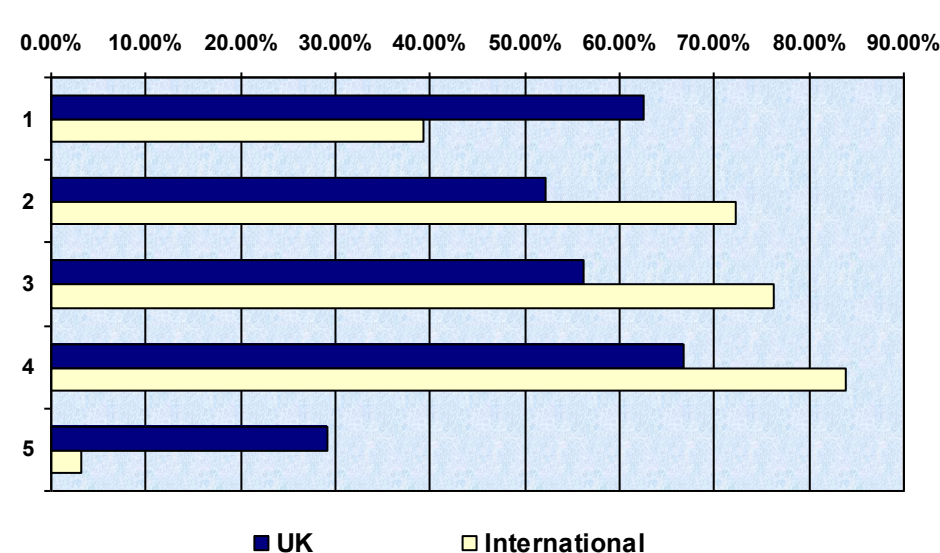
- Using CAA purely as a formative assessment resource
- Using CAA as a combined formative and summative strategy.

The data analysis module runs over a two-semester period. Using the existing databank of questions as a starting point, ten tests were designed to be distributed evenly spaced across this time period. All start and end dates automatically controlled by the Blackboard VLE. For the summative cycle, students were informed that three of the ten tests would be randomly selected as a summative mark.

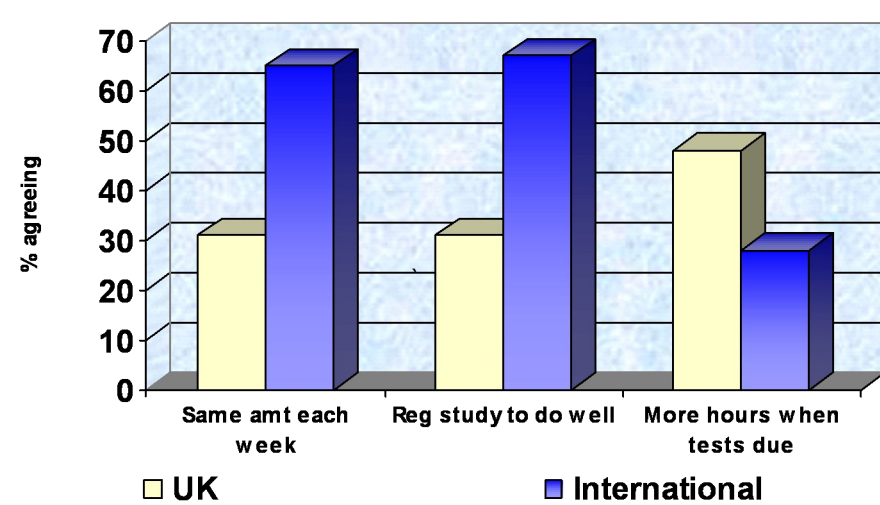
International v UK

Student Response to Feedback

- I would learn more if I received more feedback
 - The feedback helped me to understand things better *
 - The feedback showed me how to do better next time
 - I used the feedback to go back over what I have done in the test *
 - I tended to only read the marks *
- (* Statistical difference also found in item scores, where $p < 0.05$)



Quantity and Distribution of Effort



Conditions of Assessment to Support Student Learning

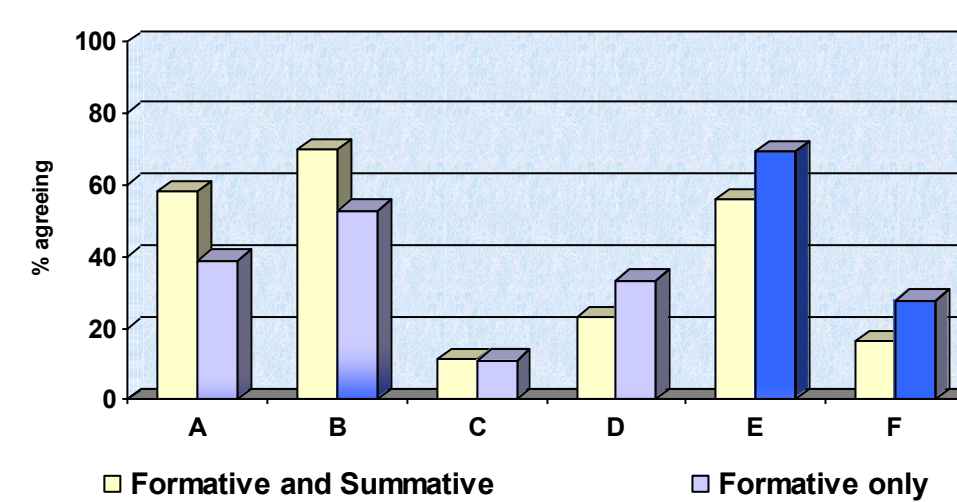
As reported in (Gibbs, Simpson et al. 2003)

	Formative only	Formative & Summative
1. Assessed tasks capture sufficient study time and effort	?	✓
2. These tasks distribute student effort evenly across topics and weeks	?	✓✓
3. These tasks engage students in productive learning activity	✓✓	✓✓✓✓
4. Assessment communicates clear and high expectations to students	✓	✓✓
5. Sufficient feedback is provided	✓✓✓	✓✓✓✓
6. The feedback is provided quickly enough to be of use to students	✓✓✓	✓✓✓✓
7. Feedback focuses on learning rather than on marks or student themselves	✓✓✓	✓✓✓✓
8. Feedback is linked to the purpose of the assignment and to criteria	✓✓✓	✓✓✓✓
9. Feedback is understandable to students, given their sophistication	✓✓✓	✓✓✓✓
10. Feedback is received by students and attended to	?	✓✓
11. Feedback is acted upon by students to improve their work or their learning.	✓	✓✓

Differences across Cycles

Feedback

- On the module I got plenty of feedback on how I was doing
- The feedback came very quickly
- There was hardly any feedback on the tests
- When I got things wrong or misunderstand them I didn't receive much guidance in what to do about it.
- I would learn more if I received more feedback
- Whatever feedback I got came back too late to be useful



During the formative only cycle, every group taking part indicated that they needed to be "forced" into participating in the formative quizzes:

"The quizzes need to contribute to the final mark"

"Participation in tests should be enforced"

"The quizzes should count towards your final mark"

Module Results

	Previous A	Previous B	Formative only	Formative & Summative
Mean	47.9	49.7	54.8	58.1
Std. Deviation	19.2	22.5	20.3	20.4
Median	46	47	60	64

RECOMMENDATIONS

The use of multiple-choice questions in objective tests should be kept to a bare minimum. Fill-in the blank, matching and ordering question types are more effective in testing high order thinking skills.

In line with student request, a reward or penalty based system for participation should be introduced.

Whenever a quiz is used **feedback** for incorrect answers **must** be supplied. Importantly this must be given in the form of advice on how common errors and misinterpretations may occur. The instantaneous feedback should be used to direct the students to a variety of other forms of learning (e.g. a variety of text books, websites, additional quizzes, discussion boards). It is felt that no feedback is necessary for correct answers.

When technology permits, avoid the use of grades, marks and supplying the "correct" answer.

Encourage students to become involved and work with peers. For example, asking students to suggest questions or activities for inclusion within the quizzes could do this. Ask students to suggest learning resources, which they found useful and incorporate these into the feedback provided.

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