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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 starting point.

### Student Response to Feedback

1. I would have more if I received more feedback.
2. The feedback helped me to understand things better.
3. The feedback showed me how to do better next time.
4. I used the feedback to go back over what I have done in the test. *
5. I tried to only read the marks. *
   
   * (statistical differences found in time series, where \( P < 0.05 \))

### Quantity and Distribution of Effort

![Graph showing quantity and distribution of effort for different weeks.]

### Module Results

<table>
<thead>
<tr>
<th></th>
<th>Previous A</th>
<th>Previous B</th>
<th>Formative only</th>
<th>Formative &amp; Summative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>47.9</td>
<td>49.7</td>
<td>54.8</td>
<td>58.1</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>19.2</td>
<td>22.5</td>
<td>20.3</td>
<td>20.4</td>
</tr>
<tr>
<td>Median</td>
<td>46.7</td>
<td>47.0</td>
<td>60.0</td>
<td>64.0</td>
</tr>
</tbody>
</table>

### 11 Conditions of Assessment to Support Student Learning

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

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.

### Formative & Summative

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”

### Differences across Cycles

Feedback

- A. On the module I got plenty of feedback on how I was doing.
- B. The feedback came very quickly.
- C. There was hardly any feedback on the tests.
- D. When I got things wrong or misunderstood them I didn’t receive much guidance in what to do about it.
- E. I would have more if I received more feedback.
- F. Whatever feedback I got came too late to be useful.

### Assessment for Learning

Six Conditions

- Assessment helps students to identify errors and potential mistakes
- Assessment helps students to develop their own learning strategies
- Assessment helps students to set their own goals
- Assessment helps students to develop self-regulation skills
- Assessment helps students to develop self-esteem and motivation
- Assessment helps students to develop a sense of achievement

### 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 requests, 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 misconceptions 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.

### References


