

A farewell to controls? The problems with experiments in education

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Innovative assessment across the disciplines¹

- **317 papers**
- **Account Of Practice** (*A publication that aims to describe and reflect on an instance of a change or development in day-to-day professional practice in assessment, and is usually self-reported and self-evaluated by one or more subject practitioners*)
= 42%
- **Controlled (or semi-controlled) experiments**
= ~ 1%

¹Hounsell, D., Falchikov, N., Hounsell, J., Klampfleitner, M., Huxham, M., Thomson, K. and Blair, S. (2007) *Innovative Assessment Across The Disciplines: An Analytical Review of the Literature*. Higher Education Academy, York.

A farewell to enlightenment?



- *'Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames..'*
- So why so few controlled studies, and should we be doing them?

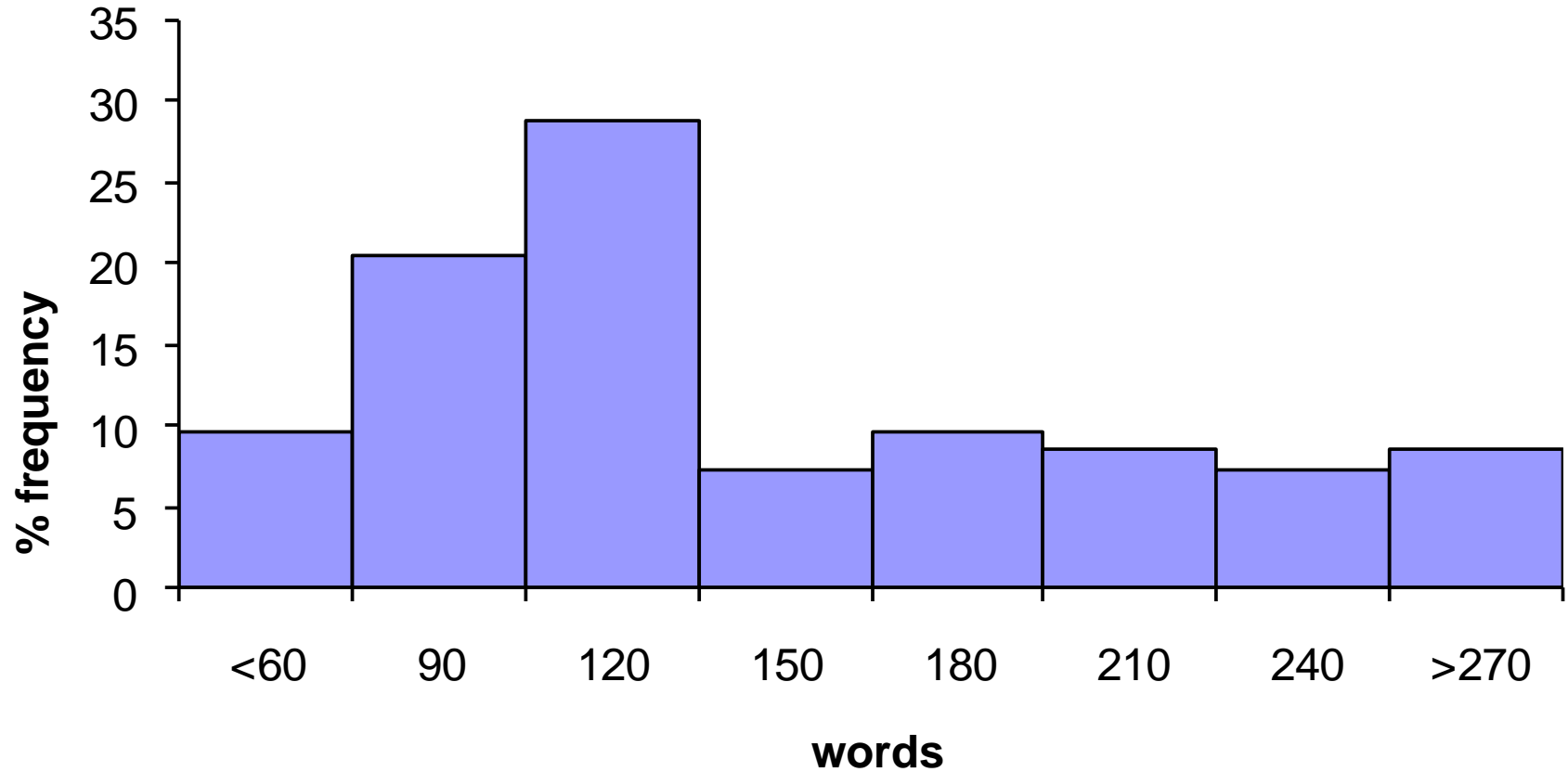
Reason 1: We don't do things that way

- E.g. Critical theory – research in the service of social justice ('its intention is not merely to give an account of society..but to realize a society that is based on equality and democracy for all..')¹
- E.g. Action research, researches 'a proposed change within everyday, natural contexts rather than within controlled settings'.²
- Example 1: 'The medium makes the message: effects of cues on students' lecture notes' - What kinds of notes do first year students take, and what cues do they use?

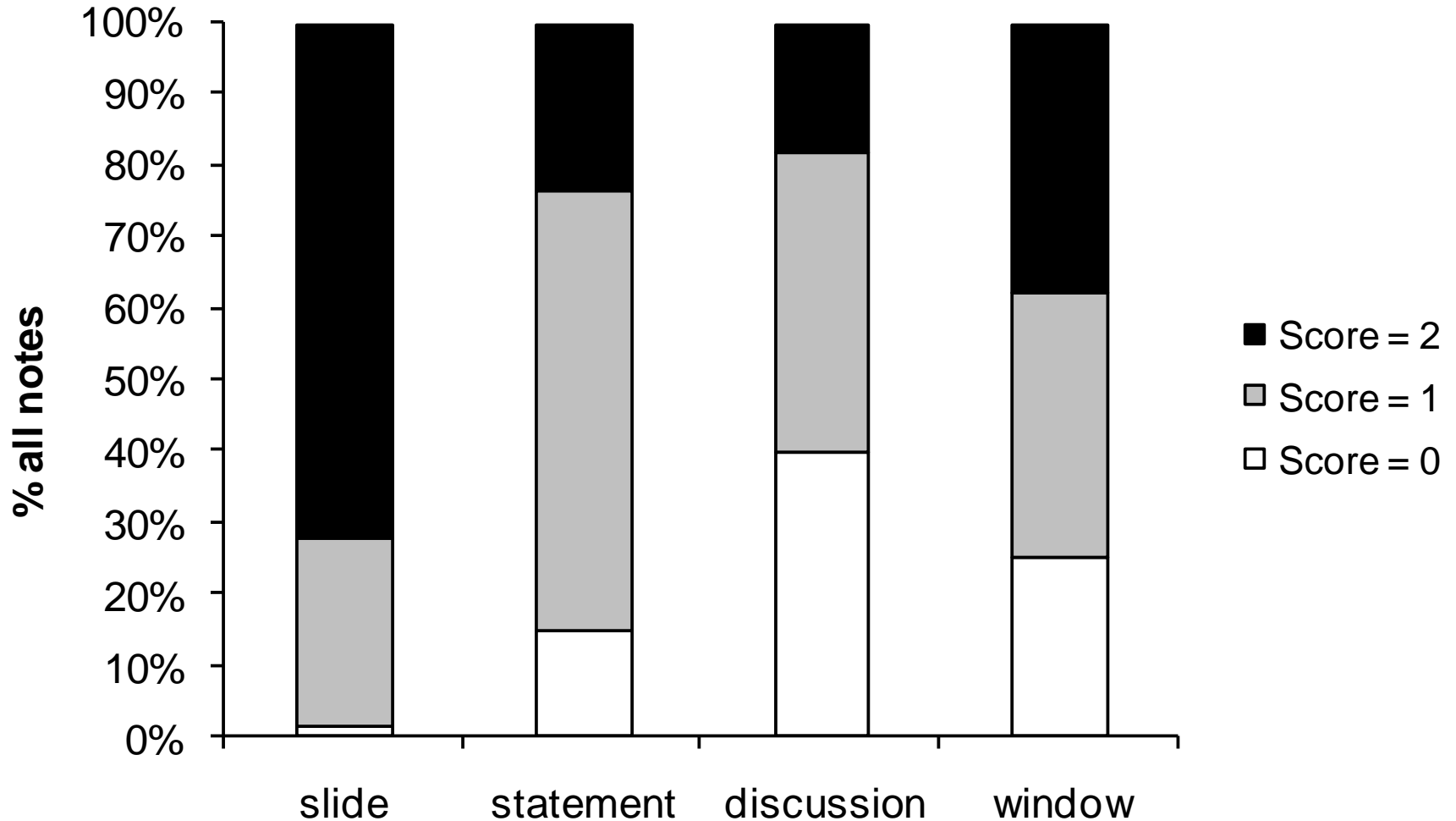
¹ from Cohen et al. (2007) quoted in Cousin , G (2009) Researching Learning in Higher Education, Routledge, London, p14.

²Cousin , G (2009) Researching Learning in Higher Education, Routledge, London, p150

How many words do 1st year students record?



..and when do they record them?





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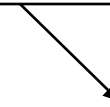
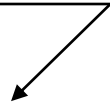
- “what efforts were made to inform students of the types of note taking deemed appropriate?”
- So do we need to make greater efforts to ensure cross-disciplinary and cross – methodological understanding?

Reason 2: Its all too complicated..

- All institutions, teachers and students are different, and interact uniquely. So is the search for statistical generalities based on ‘controlled’ situations crass and doomed to failure?
- Example 2: The effects of ‘interactive windows’ on student learning in lectures¹

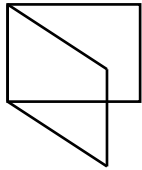
¹Huxham, M. (2005). Learning in lecturers: do interactive windows help? *Active Learning in Higher Education*. 6, 17-31.

Single lecture, given in the same week to two separate groups of students, containing two 'windows'



Part time group

Window 1



'open'

Window 2



'closed'

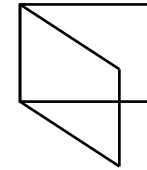
Full time group

Window 1



'closed'

Window 2



'open'

Test	P value	Expected Trend?
Year 1 results		
Class test	0.33	√
Exam (short answer 1)	0.90	√
Exam (short answer 2)	0.18	√
Exam (short answer 3)	0.85	√
Exam (essay answer 1)	0.06	√
Exam (essay answer 2)	0.50	√
Year 2 results		
Class test	0.009	√
Exam (short answer 1)	0.900	√
Exam (short answer 2)	0.800	√
Exam (short answer 3)	0.150	×
Exam (essay answer 1)	0.026	√
Exam (essay answer 2)	0.137	√

Reason 3: Its not ethical

‘The following activity would probably be unethical.

Divide the students randomly into two groups A and B. Give group A the new tool to use when learning topic X, and give group B alternative tools and material. Compare the two groups.

There are many problems with this “control group” model.

Perhaps the most obvious is that if the experiment succeeds, and a significant difference is identified, then the students in the group which performs less well will be disadvantaged. ‘¹

Example 3: Testing how effective model answers are compared with ‘standard’ feedback.²

¹http://heabiowiki.leeds.ac.uk/wiki/index.php/Ethics_in_Educational_Research , accessed March 09

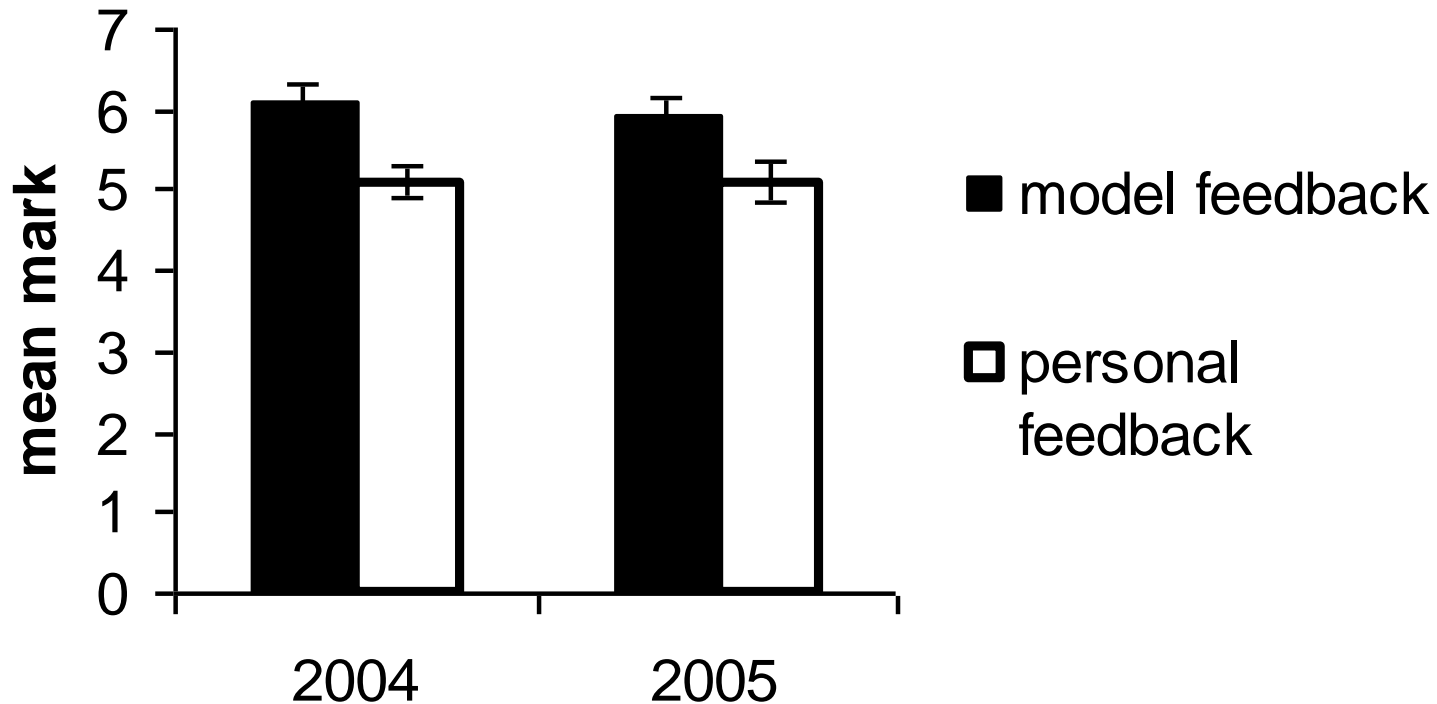
²Huxham M., (2007) Fast and effective feedback: are model answers the answer? *Assessment and Evaluation in Higher Education* 32, 1-11.

- three student groups studied; one first year module over 2 years, and a 4th year module over 1 (N= 77, 80 and 26 respectively).
- All students given both ‘model answer’ and ‘personalised’ feedback, but on different coursework questions.
- And student preference?..

‘I prefer to receive feedback as handwritten because you don’t just give the rite (sic) answer you tell us where we went wrong too..’.

‘..(it is) a friendlier way of marking with comments..(which can) prove helpful’

But their assessment performance?



So students 'don't know what's good for them?' – there's an ethical dilemma

So what have I learnt?

- Don't assume editors and referees share the same methodological assumptions as you
- Don't assume controlled trials are always the best – learn from other traditions
- Don't assume controlled trials are impossible because they can't be perfect, and be patient in the face of variability
- Think hard about ethics, and constructively challenge assumptions.