

Good question! In praise of multiple choice

Bob Rotheram

- **Who was William Beveridge?** ¹
- **What do democratic socialists believe in?** ²

If you were a teacher of social policy, wouldn't you expect even your Level 1 undergraduates to be able to answer questions like these correctly? Ten years ago, many of my students could not do so, yet they were passing the introductory module I taught. This was because the only assessment requirement was an essay selected from a wide range of options. A familiar scenario at the time, but one which I was not prepared to tolerate.

My remedy for what I saw as gross ignorance was to change the learning outcomes, so that students were required to demonstrate basic knowledge and conceptual understanding on a variety of topics, *as well as* producing a competent (but shorter) written assignment. How was the knowledge and understanding to be assessed? Via a multiple-choice test. And it worked, pretty much. The following year, students clearly had more knowledge and understanding. Multiple-choice questions (MCQs) had delivered what I wanted.

Sufficiently encouraged, I went on to create more MCQs and, when awarded a National Teaching Fellowship, experimented with other question types (e.g. multiple-response, matching, ranking). I also added feedback, computerised the 'item bank' (Sclater, 2004) and developed demonstration online assessments which were marked instantly (Rotheram, 2005). For me, this was a substantial journey of professional development, but my first steps involved using the humble multiple-choice question.

Why bother to point this out? Well, MCQs are much-derided in higher education. Departmental social science colleagues were distinctly cool about my introduction of informal quizzes and credit-bearing tests. Resistance was along the lines of:

- It's Mickey Mouse.
- It's rote learning.
- The social sciences are contested.
- The most important thing is to foster students' critical abilities.

McKenna (2001) reports further objections to 'objective testing' (via MCQs or other question types) from academics in a wide range of disciplines. Paraphrasing her respondents:

- My subject (humanities) is discursive.
- It can't assess problem-solving skills.
- It's hard to create **good** questions. (McKenna, 2001: 4-7)

Now it is true that much in the social sciences is contested (e.g. the issue of why we have poverty) and most would agree that humanities students should be able to sustain an argument. Also, many academics rightly give high priority to developing students' critical and evaluative skills. That said, there is plenty of evidence (e.g. University of Cape Town,

1996; Pritchett, 1999; Bull and Dalziel, 2003) that objective testing, including the multiple-choice question, *can* test problem-solving (and other higher-level abilities prized on most programmes). The main difficulty is in framing the questions.

However, even abilities ranked low in Bloom's Taxonomy (Bloom, 1956) have a place in higher education. Surely, students in all disciplines require some subject knowledge and comprehension of concepts and theories for them to be fairly regarded as 'educated' or 'qualified'. It would be foolish to propose that all university-level assessment should be by multiple-choice test, but I argue it is equally mistaken to suggest – as some do – that MCQs have no place in a well-constructed assessment regime on a particular degree course. In my view, both knowledge and comprehension – eminently testable by MCQs – are necessary (but not sufficient) components of all taught higher education (HE) programmes.

Using MCQs well

So, how can multiple-choice questions be used appropriately? Some HE teachers – if they accept that MCQs have potential on their programme – think at first that a multiple-choice test will drastically reduce the amount of marking they have to do. Best of all, put the test online and a computer will mark it, instantly saving a great deal of time!

Unfortunately, life is not so simple and devising a large-scale, for-credit, online exam is not a good way of starting to use multiple-choice questions with students. As with many new skills, the best advice is 'learn to walk before you try to run.' Start small, with a few questions, for informal purposes, maybe not even using computers. Then, gaining experience and evaluating as you go, extend the scale and scope of your experiments. Eventually, you may – but probably won't – be providing hundreds of students with high-quality, computerised, summative assessments, which machines mark for you.

Much more likely is that experimentation with MCQs will lead you to conclude that they can make a worthwhile contribution to your programmes, in ways which may sometimes be surprising. Importantly, the experimentation is highly unlikely to save you time, especially in the early stages. Instead, the justification for going this way will probably include: a) a better experience for your students; b) enhancement of your assessment 'repertoire'; c) useful professional development.

How you use MCQs will obviously depend partly on your circumstances, but here are some uses for my social policy questions, suggested by students and fellow lecturers.

Collections of questions

- Convey what the subject is about (not everyone knows!)
- Diagnostic tests (What do students know/not know, e.g. at the start of a module?)
- Informal quizzes
- Revision aid before exams
- Summative tests/exams

Individual questions

- Change of activity in a lecture (restoring flagging attention)
- Preparation for a class (several students each research one question on a topic, bringing findings to a class; a discussion is launched)
- Trigger for further investigation (e.g. preparing assignments)
- Probably you will be able to start using your questions when you only have a few. It's not necessary to wait till you have a large item bank.

Devising MCQs

There are several good sources of advice on writing effective MCQs. Pritchett (1999) and Bull and McKenna (2004) are particularly helpful. The main tips I would pass on, from these and other sources (and personal experience) are:

- Start with a Level 1 programme (which probably puts less emphasis on relatively advanced abilities such as synthesis and evaluation).
- Be clear about the learning outcome the question is designed to test.
- Use clear, unambiguous language.
- Be certain that the 'right' answer is indeed correct.
- Build in some feedback for all the response options (feedback can greatly enhance learning).
- Have a quality-checking mechanism (e.g. a colleague in the same discipline, perhaps helping on a reciprocal basis).
- Students can devise questions. Offer small incentives for those you accept?
- Be aware of existing sources of questions, e.g. item banks in some disciplines, publishers' websites (accompanying textbooks).
- Aim to build your item bank over several years.
- Review items periodically – do they need updating?

Feedback to MCQs

As a minimum, feedback should:

- Avoid discouraging language
- Say whether the chosen option is correct
- Contain a statement which gives the correct answer and a sentence or so on why it is correct
- Provide a few words to clear up possible misunderstanding about wrong choices
- Cite a source of information on the correct answer (to help students find out more and, importantly, to give staff a starting point if they wish to amend a question, e.g. by supplying more up-to-date data)

Feedback might also contain:

- A related question for students to think about
- A web link to further information

And finally: a multiple-choice question

Which statement best reflects the main thrust of this article? ³

- a) MCQs can test more than knowledge and understanding.
- b) MCQs have good potential for use on all taught HE programmes.
- c) MCQs can be greatly improved by building in feedback.
- d) A substantial bank of high-quality MCQs is likely to take years to create.

References

Bloom, B.S et al. (1956), *Taxonomy of Educational Objectives: Cognitive domain*, David McKay Co. Inc., New York.

Bull, J and Dalziel, J. (2003), "Assessing question banks" – in Littlejohn A (ed.), *Reusing Online Resources: a sustainable approach to e-learning*, London, Kogan Page.

Bull, J and McKenna, C. (2004), *Blueprint for Computer-Assisted Assessment*, London, Routledge.

McKenna, C. (2001), *Academic Approaches and Attitudes towards CAA: a qualitative case study*. Available at: http://magpie.lboro.ac.uk/dspace/bitstream/2134/1821/1/mckenna_academic.pdf [Accessed July 2007]

Pritchett, N. (1999), "Effective question design" – in Brown S, Race P and Bull J (eds.), *Computer-Assisted Assessment in Higher Education*, London, Kogan Page.

Rotheram, B. (2005), *Social Policy Question Resource (SPQR): a review*. Available at: <http://www.swap.ac.uk/docs/learning/SPQRreport.doc> [Accessed July 2007]

Sclater, N. (2004) (ed.), *Item Banks Infrastructure Study*, Joint Information Systems Committee. Available at: <http://www.toia.ac.uk/ibis/IBIS-Item-Banks-Infrastructure-Study.pdf> [Accessed July 2007]

University of Cape Town, (1996), *Designing and Managing MCQs: Appendix C: MCQs and Bloom's Taxonomy*. Available at: <http://web.uct.ac.za/projects/cbe/mcqman/mcqappc.html> [Accessed July 2007]

Answers

¹ *Who was William Beveridge?* The author of a very influential (1942) report which paved the way for the expansion of the welfare state after World War 2.

² *What do democratic socialists believe in?* Their key values include equality, freedom, fellowship, democratic partnership and humanitarianism. They hold that the state should control substantial resources, use them for the people and be a major player in welfare. [See, for example, George V and Wilding P, (1994), *Welfare and Ideology*, Hemel Hempstead, Harvester Wheatsheaf.]

³ *Which statement best reflects the main thrust of this article?* I argue that all the statements are valid. However, the hoped-for answer is b), that MCQs have good potential for use on all taught HE programmes.