

Are modular structures responsible for learning to forget?

Summary

- Most A-levels are currently modular, but can be taken in a linear fashion (i.e. all the exams taken at the end of the course). In England all GCSEs are now linear, following a Government announcement in 2011.
- The concern that students learn course material for an exam and then quickly forget it may be candidates' subjective experience, but the research evidence does not support this perceived cycle of learning and forgetting as a result of modular courses.
- If students' knowledge is decaying, other factors are more likely to be responsible, such as lengthy summer breaks or the tendency for students to tactically learn the material they believe will appear on an exam rather than try to gain a thorough appreciation of the subject.
- Modular assessment can lead to students being entered too early for an assessment, with the safety net that they can resit the exam later (this could be reduced by restricting resit opportunities).
- Modular assessments can eat into teaching time, and teachers may be predisposed to focus on material they think is most likely to appear on exam papers at the expense of the wider syllabus.
- AS-levels are a feature of the current modular system that provide useful insights for higher education institutions and provide students with recognition for a year's study – removing these benefits without very robust evidence would be a questionable move (see also [Has the AS-level achieved its intentions?](#) in the CERP A-level reform series).
- Modular assessment in and of itself does not cause grade inflation (see [Why have A-level outcomes risen?](#) in the CERP A-level reform series).
- Modifications to the modular system should only be made following consultation with subject experts from universities, learned bodies, teachers and their pupils.

Introduction

Following the most recent revision in 2008, most A-levels now consist of four units typically taken over a two year course of study. Two of these units contribute towards the AS-level, while two contribute to the A2 level. To receive an A-level a candidate needs to sit all four units. Units are available in January and June of each year, so a candidate could progress through their A-level by taking one unit in each session. This structure, in which the taught content of a unit is followed by an assessment, is known as a modular structure. Alternatively a candidate could take all of their units at the end of their two year course: this is known as a linear route through the qualification. At present schools and colleges are free to determine the most suitable route for their pupils.

It has been suggested that modular structures could contribute to a 'dumbing down' of the assessment system, and in 2011 all GCSEs in England were made linear. In considering the reform of A-levels we face the same decision as to whether a modular structure is the best method of assessing performance of A-level courses. This paper considers the pedagogical advantages and disadvantages of a modular approach, which apply to all assessments. The AS can be thought of as a large module within the A-level. Arguments for the retention (or otherwise) of the AS-level in particular, such as its importance in university admissions, as well as issues relating to the resitting of modules are considered elsewhere (see [Has the AS-level achieved its intentions?](#) in the CERP A-level reform series).

Learning to forget

One of the key anxieties that surfaces in the debate over modularity is the degree to which candidates learn certain material for the purpose of an examination, which following that examination they then forget. Taken to its absurd extreme, if this were true, then by the end of a modular course candidates would only retain information from one examination series to the next. On arriving at university a student who had taken a modular course would appear to be a blank slate. The plausibility of this concern is lent some strength by the views of some of the candidates themselves:

When I revise, I learn, learn, learn, do all my revision, do the exam and then a couple of weeks later, I've forgotten all of them. The whole process then repeats itself when I resit. (Michelle: 3:30) (Poon Scott, 2011, p.138).

This concern about forgetting is echoed by teachers, that under a modular system, "the pupils in their own minds don't see the need to keep the knowledge" (Heinrich & Stringer, 2011, p. 5).

There does appear to be a logical flaw, however, in this argument. If universities address the forgotten knowledge of their undergraduates by introducing an additional module at the start of university study, why do their learners not instantly forget what they have learned by the end of that module? If they do, then are we not trapped in an unending cycle of learning and forgetting with no eventual gain?

When psychologists have administered tests, rather than gathered opinions, results suggest that intelligent, highly motivated elderly people show very little deficit in the retention of formally acquired knowledge (Cohen, Stanhope, & Conway, 2011). The expression of the concern that we are continually learning and forgetting does not necessarily mean that we are. In foreign language learning, active vocabularies, those words that we can bring at will to our fingertips, are smaller than our passive vocabularies, the words that we can recognise. More generally in the psychology literature there is a distinction drawn between recall and recognition: we can recognise more readily than recall. The difference between recall and recognition has been validated through studies by neuroscientists that have shown that after the briefest exposure to thousands of images we retain detailed representations of them (Brady, Konkle, Alvarez, & Oliva, 2008). Self-report studies that report on learn and forget are weak evidence that do not shed light on what exactly (recall? recognition?) is being forgotten.

Let's say, however, that the self-reported experiences are true, that there is a process of 'learning to forget' at work at A-level. To what extent are modular structures per se the cause of this process? There are other plausible explanations at hand. For example, it has long been known that holidays are detrimental to academic performance (Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). If knowledge really does have a short half-life, then the university academic year, with an October start and shorter terms than schools and colleges, may be a factor in allowing time for the knowledge to decay. Other research suggests that our ability to retain knowledge depends on the nature of that knowledge (Conway, Cohen, & Stanhope, 2006). Given that students now place greater emphasis upon learning the examination rather

than the subject (Daly, Baird, Chamberlain & Meadows, 2012), it is quite possible that this tactical approach rather than the modular system is conducive to forgetting.

Atomised assessment

An alternative form of the argument that modular assessment is pedagogically harmful is the extent to which a process of revision that covers a wider range of material, and examinations that require the full breadth of that material to be brought together, promote a deeper form of learning that is longer lasting.

Poon Scott found this view to exist amongst students:

Especially when you're taking A2 because the papers are really synoptical. You're more knowledgeable in the subject; what I knew studying in lower six, I know a lot more now. (Nicole: 2:23) (2011, p.117)

while Heinrich and Stringer found the same view amongst some teachers at GCSE level:

We know that children in Year 10 are not as capable of producing the same kind of thoughtful, developed, work [as] in Year 11, and they'd want them to have the space to do that. (Deputy Head, Maintained school) (2011, p.9)

The ability to bring to bear a wide range of materials, a synoptic overview, is valued by society and so should be apparent in A-level assessment. Synopticity, however, is clearly a matter of degree. Just as A-levels switched from two-year courses to a series of first six, then four units, in recent years universities have increased the frequency of their assessments, potentially at the cost of some synopticity. The degree of synopticity required in a course and a final assessment is a value-judgement that needs to be made, presumably by subject experts.

Where university study differs, however, from study at school, is that universities provide an environment conducive to the extensive revision sessions required for examination sessions which cover a long and broad syllabus. Stringer and Heinrich's (2011) research suggests that for some pupils at schools and colleges a quiet environment can be extremely hard to maintain and that modular examinations, for those pupils, are therefore preferable.

Modern behaviour is strategic

Clearly there is more we would like to know about the pedagogical impact of modular assessments, but this much we do know. Modular assessments, in and of themselves, are not responsible for grade inflation: the cause lies elsewhere (see [Why have A-level outcomes risen?](#) in the CERP A-level reform series). Modular assessment does take up teaching time and can encourage premature entry – but both of these concerns could be ameliorated by restricting resitting (see [What is the impact of resitting at A-level?](#) in the CERP A-level reform series). Modular structures have been blamed for strategic learning practices that harm learning; yet strategic behaviour is a key and often valued aspect of modern life. For example, employers want staff who can prioritise and behave tactically to achieve the best end result. Finally, if learners really are learning and forgetting, for which the evidence against is stronger than that for, there are many alternative explanations for this.

Given that modular assessment seems to be relatively blameless of all of these charges, therefore, it is questionable whether the benefits of the AS-level should be sacrificed on the basis of what seems to amount to very weak evidence (see [Has the AS-level achieved its intentions?](#) in the CERP A-level reform series). Should modules be changed in length, this should be done on the basis of advice from subject experts from universities and learned bodies, in consultation with those people who understand the circumstances of the learning experience in schools and colleges best: teachers and their pupils.

Bibliography

- Brady, T. F., Konkle, T., Alvarez, G. A., & Oliva, A. (2008). [Visual Long-Term Memory Has a Massive Storage Capacity for Object Details](#). *Proceedings of the National Academy of Sciences*, 105(38), 14325–14329. doi:10.1073/pnas.0803390105
- Cohen, G., Stanhope, N., & Conway, M. A. (1992). [Age differences in the retention of knowledge by young and elderly students](#). *British Journal of Developmental Psychology*, 10(2), 153–164. doi:10.1111/j.2044-835X.1992.tb00569.x.
- Conway, M. A., Cohen, G., & Stanhope, N. (1992). [Very long-term memory for knowledge acquired at school and university](#). *Applied Cognitive Psychology*, 6(6), 467–482. doi:10.1002/acp.2350060603.
- Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). [The Effects of Summer Vacation on Achievement Test Scores: A Narrative and Meta-Analytic Review](#). *Review of Educational Research*, 66(3), 227–268. doi:10.3102/00346543066003227
- Daly, A. L., Baird, J.-A., Chamberlain, S. & Meadows, M. (2012). [Assessment reform: students' and teachers' responses to the introduction of Stretch and Challenge at A-level](#), *The Curriculum Journal* 23(2).
- Foer, J. (2011). [Moonwalking with Einstein: The Art and Science of Remembering Everything](#). Penguin, UK.
- Heinrich, M. & Stringer N. (2011). Briefing paper: *The effects on schools and pupils of modularising GCSEs*. Manchester: AQA Centre for Education Research and Policy.
- Poon Scott, E.S.M. (2011). *The A levels Resit Policy and its Effect on Student Learning in Three Educational Institutions in England*. Unpublished doctoral thesis.
- Sadler, D.R. (2007). [Perils in the meticulous specification of goals and assessment criteria](#). *Assessment in Education: Principles, Policy & Practice*, 14, 3, 387-392.