



2016-17 Research Report



Authors:	Dan Barrington and Lilly Gibson
Research Question:	To what extent is high structure testing in teaching science more effective than business as usual teaching?
Context: When, Where, who?	<p>In the spring term 2017 6 year 9 groups involved. 3 did the high structure testing, 3 stuck to their original Science scheme of learning. (DRB, LMG, MKN followed new scheme. DRB, CEB and LXC followed old scheme)</p> <p>Sets 4 and 5 in both P and W didn't take part as they don't cover the heart until next year.</p>
Why do it?	<p>Our goal is to <i>"further empower all students with more internal academic belief and the tools to learn"</i>. As GCSE and A levels move away from modular towards a linear styles of assessment it becomes increasingly important that students are able to retain and recall information over a greater time period. Statistical significance not proven between the test groups post-test and there previous 20 min test.</p> <p>We believe (and the anecdotal evidence suggests) that learners are empowered by their teachers more successfully if lessons are based on high structure testing followed by a successive variety of assessments.</p>
What was tried?	<p>We were looking to develop a structure for assessment that can be used during a standard lesson sequence in Science.</p> <p>The sequence should evaluate the impact of high structure testing where pupils will undergo a period of instruction followed by a successive variety of assessments. This differs from current practice wherein pupils undergo successive periods of instruction followed by a summative assessment.</p> <ul style="list-style-type: none"> • Year 9 Organisation part 2 circulatory system (Biology) • Nine groups 4 on structured testing and three on standard instruction based learning. • Three lessons to cover the theory as a whole (All theory put on SMH for students to access outside of lessons) Subsequent lessons to be broken down into the topics, each with associated testing (e.g. a test for heat, test for lungs)
How was it tested?	<ul style="list-style-type: none"> • Pre-test using the 20 minute test (Peer assessed apart from 6 mark), then redo 20 minute test but teacher to mark.
What was the impact?	<p>Data needs further analysis but initial observations suggest that for more able sets the attainment compared to other 20 minute test results has improved. Personally I found the greatest improvement was found in boys who find it hard to focus and have low level behaviour problems. I now only teach this group this way, they've openly said they prefer it.</p> <p>We initially decided to use the same pre test and after test. LXC was shocked by the results of her pre test and suspected that students had seen the test from other groups (we did encouraged teachers to collect in all tests). We then changed the post test. Scheme was not properly assessed for 1 group.</p>



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<p>Implications for Practice: What next?</p>	<p>What are we going to do next time?</p> <ul style="list-style-type: none"> • Monitor students use of SMH • Bigger sample size • Investigate using all 3 Sciences • Include all ability groups • Ensure the post and pre-test are very closely standardised • Maintain the use of different pre and post test. <p>What worked this time that might not work next time</p> <ul style="list-style-type: none"> • New mixed ability sets in Science might not make the data from this year comparable <p>What didn't work this time that might work next time?</p> <ul style="list-style-type: none"> • Generate greater data set that we can analyse <p>How are we going to share our learning with others?</p> <ul style="list-style-type: none"> • Sharing of the process happened throughout the scheme but discussions with students about greater ownerships of their own learning proved to be a powerful tool/
<p>Links for further reading</p>	<p>http://www.learningspy.co.uk/featured/deliberately-difficult-focussing-on-learning-rather-than-progress/</p> <p>https://bjorklab.psych.ucla.edu/research/</p> <p>“Testing effect</p> <p>Taking a test often does more than assess knowledge; tests can also provide opportunities for learning. When information is successfully retrieved from memory, its representation in memory is changed such that it becomes more recallable in the future (e.g., R. A. Bjork, 1975); and this improvement is often greater than the benefit resulting from additional study (Roediger & Karpicke, 2006). Interestingly, taking a test can modify memory for information that was not explicitly tested initially (provided that the untested information is related to the tested information in certain ways; Anderson, R. A. Bjork, & E. L. Bjork, 1994; Chan, McDermott, & Roediger, 2006; Hamaker, 1986). Sometimes later recall of this untested information is improved (see, e.g., Hamaker, 1986), but sometimes it is impaired (see, e.g., Anderson et al., 1994), often dependent upon the type of relationship existing between tested and untested information (e.g., Little, Storm, & E. L. Bjork, 2011).”</p>