



2016-17 Research Report



Authors:	Lucy Taylor
Research Question:	Does the use of spaced learning techniques improve the GCSE results of Year 11 students?
Context: When, Where, who?	I intend to use a year 11 class as a focus of this research. Class 11Ma4b are ideal to use as they are a class that fits the profile. Their main barrier to progress is their inability to retain what they have been taught. I will be teaching them once a week and I intend to use this lesson as a recall lesson where we do not cover new concepts, but instead revisit old topics to aid recall. The programme of what is studied when will be clearly designed to follow the 'spaced learning' ideals.
Why do it?	It is much discussed that our lower achieving students at GCSE struggle to retain what they have been taught. In the classroom, when they have just been taught a concept they can answer questions of all difficulties but within a week this knowledge has gone. If we can tackle this, then we can make huge gains in improving the mathematical understanding of these students. This will then automatically lead to improved GCSE grades for these students. There is a growing body of evidence, based on cognitive science, that the use of 'spaced learning' can have an impact on retention of key concepts. This is where topics are revisited after a clearly defined time frame. By forcing recall, neural pathways are strengthened and concepts are more deeply imbedded into memory.
What was tried?	I will be teaching them once a week and I intend to use this lesson as a recall lesson where we do not cover new concepts, but instead revisit old topics to aid recall. The programme of what is studied when will be clearly designed to follow the 'spaced learning' ideals. Detailed plan in appendix 1
How was it tested?	The start of the analysis threw up some problems. (Appendix 2) Due to long term staff absence last year, the class I am analysing had actually performed better than the class above in the year 10 exams. This meant that on reflection it was very difficult to compare in any meaningful way. With staffing being sorted, the class above improved hugely and this means that a superficial look at the data shows that the studied class got continually worse whereas the reality is that the class above were just moving to where they should have been all along. I tried to look at a scaled score where I calculated where the studied class were along the scale of the set below (0) and the set above (1). If there were exactly in the middle, the scaled score would be 0.5, with the higher the score, the closer they were to the set above. My next analysis was to compare with just the class below. They also had staffing issues in year 10 and it became apparent that this was also an ineffective analysis tool. I then decided that I would look at MLO (most likely outcome) predicted grades for just the class involved on the project to see if there were any patterns. The average for the class at the start of the year did improve by 2/3 of a grade between year 10 and December of year 11. The class at the end of the year went down by



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	<p>1/3 of a grade from December to March. This could be explained in many ways, change in staff doing the grades meant inconsistent prediction criteria were used, a change in attitude and motivation towards the exams, regular absence from lessons due to needs of other subjects and the disruption caused by changing class and moving to a class that was substantially bigger. It could also be that at this point in the year, students needed a different form of revision programme.</p>
What was the impact?	<p>I looked the results of the final assessment given to students at the end of the year. (Appendix 3) I just looked at students who had been in the class for the whole year. In order to make it possible to analyse, I categorised these as good (green). Middle (yellow) or poor (red). For topics studied in the first two terms, and tested with straightforward questions, the questions were answered well or in the middle. The topics that were studied later, and therefore recapped later, he results show some questions were not answered well. There were obviously less occasions for students to practice retrieval of these topics and this would therefore fit in with the theory of spaced learning. This data is far from being conclusive but does at least give a suggestion that the project may have been somewhat successful.</p>
Implications for Practice: What next?	<p>We need to be proactive and ensure that retrieval of recently learnt topics is built into our programme of study. The planned retrieval of key topics is as essential as the original teaching, in fact could be considered more important. Retrieval practice is only effective if students have fully understood the topic and therefore quality teaching of key points needs to be included.</p>
Links for further reading	<p>Making things Hard on Yourself, But in a Good Way: Creating Desirable Difficulties to Enhance Learning by E Bjork and R Bjork On The Symbiosis of Remembering, Forgetting and Learning by R Bjork</p>