

The impact of getting students to produce their own materials during sessions where they are taught about revision techniques

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Draft research title	The impact of getting students to produce their own materials during sessions where they are taught about revision techniques
Research topic or area <i>Complete this section explaining the area you are interested in researching</i>	<p>Revision techniques that aid in memorising and recall are becoming more and more important to students as the assessment in their qualifications moves increasingly towards terminal exams.</p> <p><i>'Learning by doing'</i> (students actively constructing something themselves) is often seen by some as a crucial aspect of students' mastery of knowledge and skills, as opposed to just having students engage in <i>'learning by viewing'</i> (such as using pre-prepared examples). However, when introducing revision techniques, using a <i>'learning by doing'</i> approach requires a significantly greater time investment in an already tightly packed curriculum. We want to research whether using a <i>'learning by doing'</i> approach makes this extra time investment worthwhile: whether it has an effect on how much students subsequently use revision techniques independently.</p>
<i>Describe the gap in the research that led you to explore this area or the need to explore this in your school</i>	<p>This is an important area to explore using a randomised controlled trial design because there is concern that students do not carry out enough effective revision on their own outside of lesson time. A range of revision techniques are already taught to our students and the curriculum time being devoted to their teaching is growing as their importance is recognised. However, the impact that they have upon the revision that those students then carry out independently has not yet been investigated.</p> <p>Regarding the methods used to teach these techniques to students, there has been some research carried out already into the impact of using <i>'learning by doing'</i> versus <i>'learning by viewing'</i> approaches when teaching. However, so far these have not been focused on the teaching of revision techniques. They have also focused on the performance of students in a particular subject area whereas we want to measure the impact on students' subsequent use of the techniques they have learned.</p>

	<p>Stull and Mayer (2007) looked at the effect of giving students graphic organisers for a particular Biology topic versus asking the students to produce their own. As expected they found that the students generating their own took longer to learn the material but it was those who had been given the graphic organisers who showed the best learning of the topic. They concluded that the extra cognitive processing required to produce their own graphic organisers had meant that there was less capacity remaining for the students' processing of the actual content. By contrast, the other students were engaged by being challenged to see how the content had been converted into a graphic organiser.</p> <p>In addition, Sweller and Cooper (1985) found that learning was faster and better when some Maths practice questions were replaced with worked-out examples.</p> <p>It will be interesting to see if these differences in students' performance are also seen in their independent usage of revision techniques following their exposure to them.</p>
<p>Research aim(s)</p> <p><i>Phrase your research aim in a way which reflects what you hope to find out</i></p>	<p>The aim of this research is</p> <ul style="list-style-type: none"> to establish whether making students produce their own materials when they are being taught a revision technique will increase the time they subsequently spend using that technique independently in the future
<p><i>Describe how you think you could measure this</i></p>	<p>Students involved will be randomly assigned to two groups. One group will be taught a revision technique and given examples of how that technique can be used.</p> <p>The other group will be taught the same revision technique and also given examples of how that technique can be used but, in addition, they will be given time to produce their own materials using the technique.</p> <p>Following a period of time, both groups will then be asked about the amount of time they spent using the technique independently (outside of lesson time).</p>
<p>Research questions</p>	<p>In order to achieve these aims, the research will seek to answer the following research questions. . .</p> <ul style="list-style-type: none"> <i>Does getting students to produce their own materials during sessions where they are taught about a revision technique increase the amount of time they spend using that technique independently afterwards.</i>

<p><i>What is the null hypothesis?</i></p> <p><i>What is the experimental hypothesis?</i></p>	<p><i>Experimental hypothesis:</i> There will be a significant difference in the amount of time students spend independently using a revision technique when they are made to produce their own materials using the technique during a revision skills lesson compared to when they are not given this opportunity.</p> <p><i>Null hypothesis:</i> There will be no significant difference in the amount of time students spend independently using a revision technique when they are made to produce their own materials using the technique during a revision skills lesson compared to when they are not given this opportunity.</p>									
<p>Research design</p> <p><i>Describe here the method you plan to use</i></p>	<p>A within-subject design will be used with a post-test only. To address the aims of the research the independent variable of intervention type will be operationalised by creating two conditions:</p> <p>IV Level 1 (Control condition): revision technique taught <u>without</u> the opportunity for students to produce their own materials using the technique</p> <p>IV Level 2 (Intervention): revision technique taught <u>with</u> the opportunity for students to produce their own materials using the technique</p>									
<p>Method</p>	<p>Participants (who will experience the conditions and how they will be chosen and randomly allocated)</p> <ul style="list-style-type: none"> Students from Year 11 will participate in this study. Initially, two classes of students will be chosen that have a similar spread of ability (based on Cognitive Abilities Test data) and similar numbers of students who are disadvantaged (based on Pupil Premium data). Each class will receive training in two chosen revision techniques. One class of students will be randomly allocated as the control group for technique 1 and will also be the intervention group for technique 2. The other class will be randomly allocated as the intervention group for technique 1 and will also be the control group for technique 2. This allocation will be happen via a computer-generated random number. <table border="1"> <thead> <tr> <th></th> <th>Revision technique 1</th> <th>Revision technique 2</th> </tr> </thead> <tbody> <tr> <th>class A</th> <td><i>control</i></td> <td><i>intervention</i></td> </tr> <tr> <th>class B</th> <td><i>intervention</i></td> <td><i>control</i></td> </tr> </tbody> </table>		Revision technique 1	Revision technique 2	class A	<i>control</i>	<i>intervention</i>	class B	<i>intervention</i>	<i>control</i>
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class A	<i>control</i>	<i>intervention</i>								
class B	<i>intervention</i>	<i>control</i>								

Materials (what you intend to use, e.g. the test(s) and training materials)

- Teaching of the revision technique will involve a pre-prepared PowerPoint presentation that describes, step-by-step, how to use the technique. Pre-prepared examples using the technique will be available on paper, enough for each student to individually look over.
- For the students who will be producing their own materials using the technique, materials will be available. These will depend on the technique being used (but will likely involve paper, card etc.)
- A questionnaire is required that will ask students about the time spent using the revision techniques following the lesson

Procedure (how you plan to do the research and what will happen)

- Students in both classes will receive similar training in two particular revision techniques. This will involve a description of the technique followed by exposure to examples of how this technique can be used. Students in the intervention group for a revision technique will then also be given time to produce their own materials using the technique.
- The time requirement for the intervention group in each technique will be longer than is required for the control group. As both classes will experience one technique as control and the other as intervention, the overall time requirement for each class will be identical.
- After two weeks each student in the two classes will be asked to complete a questionnaire asking them how long overall they have spent using the two revision techniques in their own time.
- Our choice of two revision techniques to use in the study will be based on those that suite the way we are delivering them in a lesson format. Possible techniques include: mindmaps, flash cards, summaries, visual organisers.
- Due to the nature of our research design, we also aim to expand our study to include other classes. These would likely be from other schools in our alliance.