

# Berkhamsted Bites

Does switching from re-reading to active self-testing improve academic performance?

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# Context for Berkhamsted

As a Year 12 student, I had observed that the majority of my peers had defaulted to re-reading notes as the primary revision strategy which is a pattern consistent with research finding that 75% of students rely on this technique, despite it being amongst the least effective method. With the end of Year 12 assessments approaching across all subjects, I had co-ordinated a structured 4 week peer study group with involvement from 6 Year 12 students. The group had been divided equally between 3 participants in Group A who had adopted retrieval practice techniques and 3 participants in Group B continuing the habitual re-reading approach, acting as a control. All participants are within 1 to 2 grades difference between one another to ensure there was no conflict between knowledge and results from testing.

Participant	Grades
1	AB
2	AB
3	AB
4	AA
5	BB
6	AB

Group A

Group B

# Intervention

Group A had been briefed on three retrieval practice techniques which had been drawn from research. Flashcard self-testing from memory utilising digital tools such as Anki, timed past-paper question attempts without consulting notes, and a 'blank page' technique where participants wrote everything recalled on a topic from memory to identify gaps in their knowledge. Group B had been asked to continue their routine of re-reading and annotating notes.

All 6 participants had completed identical low-stakes knowledge quizzes weekly with 10 questions matched to the topics that had been studied over the course of the week, these quizzes had been administered at the same time of the week each week over four consecutive weeks.

Scores had been recorded anonymously. At the start and end of the studying intervention, participants completed a short self-assessment survey which had rated their revision confidence and their preferred studying strategy.

**Research**  
**Paper 1W**

15 minutes

Please fill all boxes in red.

Participant ID

These tests will be marked and destroyed after the data has been stored. All questions are from publicly available sources and are designed to test your revision skills and techniques.

# Takeaway

Group A students had reported that retrieval practice felt 'full of effort' and uncomfortable in the first week. A majority had noted the impulse to check their notes during the self-testing technique. However, on Week 3, all of the participants had described feeling more confident in recalling material without prompts. The majority of students in Group B had voluntarily adopted retrieval practice by the final week, which mirrored the research that students who use retrieval practice find it more applicable over time.

A valuable qualitative insight was that students initially combined the naturalness to re-read with actual learning which is a metacognitive error that this intervention aided in resolving. The end of the project survey information had showed that Group A's confidence score rose from 2.3/5 to 3.9/5, whereas Group B's moved from 2.5/5 to 2.8/5

Group A	Group B
2.3 → 3.9	2.5 → 2.8
69.6% increase	12% increase

## Table 1 Quiz Results

Quiz Results						
Participant	Grade	Baseline	Week 2	Week 3	Week 4	Change
<b>Group A</b>						
Participant 1	AB	5	7	8	9	+4
Participant 2	AB	6	7	8	8	+2
Participant 3	AB	5	6	8	9	+4
<b>Group A Average</b>		<b>5.3</b>	<b>6.7</b>	<b>8.0</b>	<b>8.7</b>	<b>+3.3</b>
<b>Group B</b>						
Participant 4	AA	6	6	7	7	+1
Participant 5	BB	5	6	6	7	+2
Participant 6	AB	6	7	7	7	+1
<b>Group B Average</b>		<b>5.7</b>	<b>6.3</b>	<b>6.7</b>	<b>7.0</b>	<b>+1.3</b>

The data above shows the results from the weekly research test alongside the improvement and the participant's details.

## Table 2 Confidence Survey Results

Confidence Survey Results					
Group	Strategy	Start Score	End Score	Change	% Increase
<b>Group A</b>	Retrieval Practice	2.3	3.9	<b>+1.6</b>	<b>69.6%</b>
<b>Group B</b>	Control	2.5	2.8	<b>+0.3</b>	<b>12.0%</b>

The data above shows the confidence levels of the respective groups before and after the intervention and the changes.

# Science of Learning

Retrieval Practice is *a learning strategy that involves actively recalling information from memory to strengthen long-term retention* (EEF, 2021). Roediger and Karpicke (2006) had found that students using this technique remembered over 50% more information than the students who re-read their notes, with an advantage in longer retention intervals (#23). Students consistently and incorrectly believe that re-reading is the most effective revision strategy which this study has aimed to investigate.

Smith et. al (2016) had further demonstrated that students who practice retrieval practice outperform those who utilise the re-reading technique by 17 to 26% despite stressful exam conditions, as the practice of self-testing creates several memory *retrieval pathways* within the brain rather than single surface-level encoding (#76). The outcome of this research, which is a 2.5× higher point gain for Group A is consistent with the studies from researchers and evidence, supporting the broader argument that students require explicit instruction in how and what to revise.

Test-enhanced learning: taking memory tests improves long-term retention (Henry L Roediger, Jeffrey D Karpicke, 2006) referenced in paragraph 1 and under (#23).

Retrieval practice protects memory against acute stress (Smith et. al, 2016) referenced in paragraph 2 and under (#76).

Journal of Applied Research in Memory and Cognition (Yan et. al, 2016)