



Educake: Using educational research to improve attainment and progress

As the research leader at a large secondary school, I believe the use of evidence-informed practice is vital when striving for optimal progress. Reviewing the literature from cognitive psychology and educational research can provide clarity on the benefits of various areas of educational practice. Through an understanding of this research and as a customer of Educake, this article has been commissioned to highlight the many benefits this platform can bring to your school.

Educake could improve the exam results of your students by 2-3 grades.

A recent review of the literature on different techniques for revision highlights that 'retrieval practice', the recall of information from memory, is by far the most effective and efficient form of revision, showing that students on average achieved 20% higher in tests when using retrieval practice as their main technique for revision.¹ Educake was built to provide students with the greatest chance of achieving excellent grades by using effective retrieval practice as its core concept.

The literature and our own experience tells us that students typically revise through re-reading and highlighting notes. Whilst these study practices feel rewarding at the time, there is direct research showing these are the least effective techniques for improving long-term memory and therefore these students often achieve worse exam results.² Quantitatively, another review showed that students that revised using retrieval practice, like Educake, remembered 2.5x more information than students using these typical revision techniques.³

Educake uses effective retrieval practice that is in line with the research recommendations.

We know that when retrieval practice is most effective, students must recall information from memory without the aid of their notes. This is where Educake differs from its competition. Other platforms often provide the information with the test; however, it is well documented that this is less effective. Even with Educake's study guides, teachers have control over when they are used to ensure students 'think hard' about a topic and retrieve this information from their memory.⁴ Recommendations from the research also state that providing the answers immediately after a question will lead to better long-term learning, therefore Educake allows students to effectively retrieve the relevant information and then provides instant feedback on their progress.

Educake is effective for improvements in both content and skills.

Retrieval practice has been shown to be effective for both the development of long-term memory of content and skills.⁵ The various questions that test skills, such as questions on statistics, will support the development of these areas, resulting in better exam performance.

Educake will benefit all students.

A common myth is that everybody learns in different ways, known as learning styles. This has resulted in recommendations that students should choose techniques that feel the most effective for them and these will therefore be the most effective. Whilst this sounds logical, it is not backed by research. Learning styles are shown to have no impact on long-term learning and the research is clear that all students benefit from revising through evidence-based revision techniques, such as retrieval practice (regardless of whether students feel this is the most beneficial technique for them).⁶

Students with learning difficulties may benefit the most from Educake.

The impact of retrieval practice has been shown to be greatest for students with a poor working memory,⁷ and research suggests that 70% of students with learning difficulties in reading have a poor working memory.⁸ It is therefore reasonable to believe that using retrieval practice, like Educake, will have a particularly positive impact on those that have learning difficulties.

Educake reduces wasted time during study sessions.

At the start of each study session, time is often wasted by students working out what to revise and how. This directly reduces the effectiveness of each session. Cognitive offloading shows that if we reduce the external thinking of students by supporting their revision plan and showing them how to revise, then they will probably perform better. Educake supports the use of a revision timetable by allowing students to logically work through the specification, splitting each topic into manageable chunks, and ensuring students revise in the most effective way.⁹

Educake helps students cover all topics, not just their perceived weaknesses.

Students tend to focus their revision time on their 'weakest topics' and therefore spend significantly less time covering topics they feel they have learnt well. However, we know that students overestimate how much they remember, as shown by Dunning-Kruger, and this effect is particularly strong for the least able students, meaning they often overestimate their memory the most.¹⁰ Educake can help distribute this time better through its logical layout, helping students to assess themselves across all topics within a specification.

Educake supports students' metacognition.

Metacognition refers to how students monitor their own learning and then use this information to control future learning. The impact of this is shown by the Educational Endowment Foundation (EEF) to offer an extra 8 months of progress per academic year, when used effectively.¹¹ Progress trackers within Educake help students to monitor their performance and highlight strengths and weaknesses for them. Educake will also suggest to students topics to focus on based on their performance, supporting this metacognitive process.

Educake can help students overcome misconceptions.

Misconceptions within learning are common and are challenging to overcome. Research on 'proactive interference' shows us that once we have a memory saved for a particular topic or question, it is very challenging to replace it. The literature suggests that the best solution to overcome proactive interference (misconceptions for students) is using retrieval practice, like Educake.¹²

Educake can support the use of spaced learning to ensure maximum effectiveness.

Spaced learning is an equally well researched area of cognitive psychology, showing that if study time is distributed rather than bunched into the same study session, then outcomes are significantly better.¹³ A typical student may revise each topic once, in order before their exams. It is well documented however that if this same amount of time was distributed across weeks and months then results may be significantly better. Educake allows teachers and leaders to schedule retrieval tests to better distribute students' time, supporting the practical advice from the research on having lag times of weeks and months between revisiting a topic.

Educake is a highly effective use of lesson time.

There are now strong evidence-based recommendations that teachers have regular reviews of learning within lessons, often as starters and as regular entire lessons. The most effective use of this time is using retrieval practice and by distributing these tests over time. Using tools such as Educake may be one of the most effective uses of this lesson time.¹⁴

Educake is a highly effective use of homework.

The EEF suggests that homework is most effective when students practice content and/or skills. This is probably made even more effective by assigning individual students work based on their weaknesses highlighted by formative and summative assessment.¹⁵ Educake allows teachers to assign these targeted questions to individual students, based on their data.

Summary:

1. Educake could improve the exam results of your students by 2-3 grades.
2. Educake uses effective retrieval practice that is in line with the research recommendations.
3. Educake is effective for improvements in both content and skills.
4. Educake will benefit all students.
5. Students with learning difficulties may benefit the most from Educake.
6. Educake reduces wasted time during study sessions.
7. Educake supports students' metacognition.
8. Educake can help students overcome misconceptions.
9. Educake can support the use of spaced learning to ensure maximum effectiveness.
10. Educake is a highly effective use of lesson time.
11. Educake is a highly effective use of homework.

Mark Leswell, Summer 2020

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