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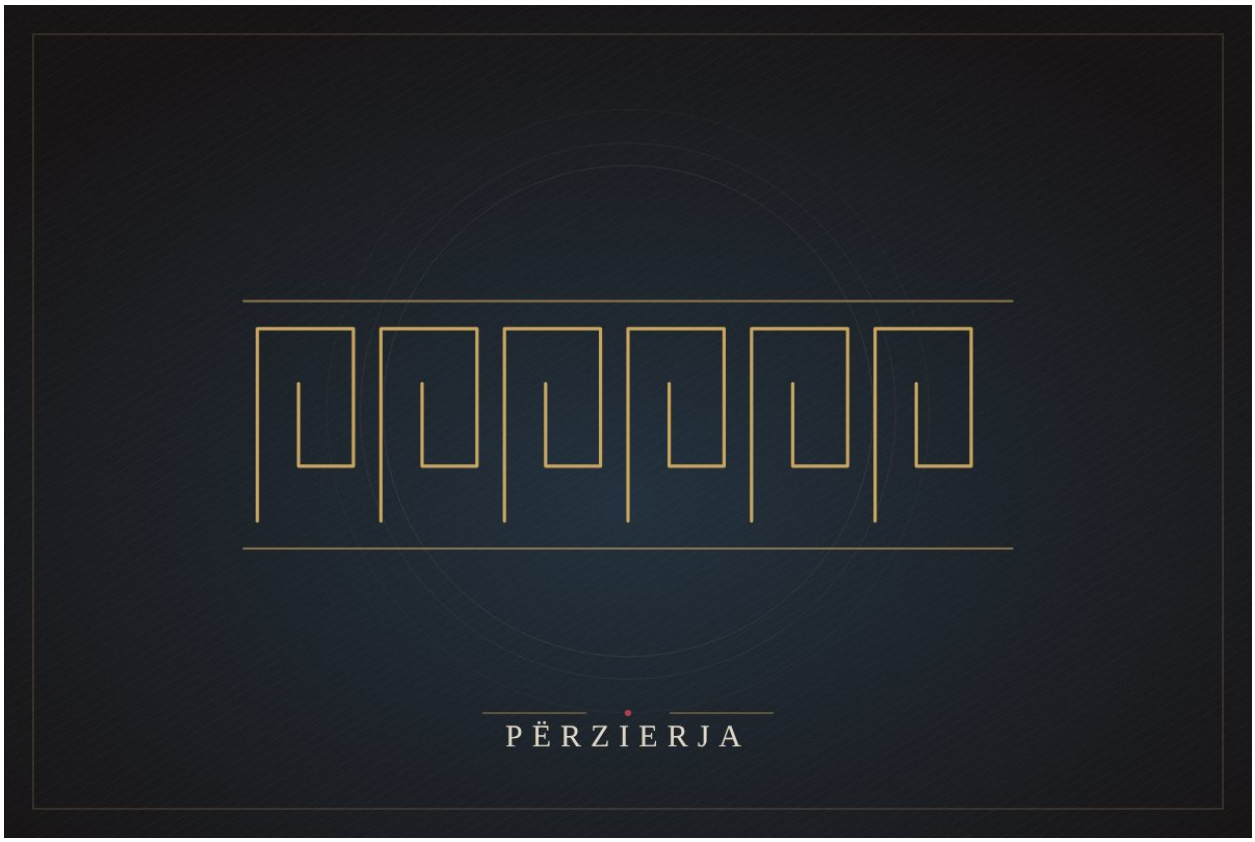
Practice

Interleaved practice: why mixed-up exercises teach better than ones in order

The experiment by Doug Rohrer and Kelli Taylor with geometry problems (2007), the study with painters' styles and why blocked practice seems to work better

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Translated from the Albanian original by the editors.



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Imagine you are learning to calculate the volume of four geometric shapes. The usual way is to do ten exercises for the first shape, then ten for the second, and so on. This is called **blocked practice**. The other way is to mix the exercises: one for the first shape, one for the third, one for the second. This is called **interleaved practice**.

The experiment

In 2007 the psychologists Doug Rohrer and Kelli Taylor tested exactly this with university students. During practice, the blocked group did better: it was easier to repeat the same formula several times in a row. But in the final test, a week later, the interleaved group solved about 63 per cent of the problems correctly, while the blocked group managed only about 20 per cent.

The painters

In 2008 Nate Kornell and Robert Bjork showed participants paintings by different painters, so that they would learn to recognise each one's style. When the paintings were shown mixed, participants recognised the styles better in new paintings. But most interesting: most participants believed they had learned better with the grouped paintings. Feeling and result did not match.

> *The practice that feels easiest is not always the practice that teaches most.*

Why it works

When exercises are grouped, you know from the start which method to use. When they are mixed, you have to decide yourself: "What kind of problem is this?" That is exactly the skill needed in an exam or in life, where problems do not come labelled. Mixing also helps you see the differences between similar concepts.

The limits

Interleaved practice works best when topics are similar and easily confused. For something entirely new, it may help to start with a few exercises in a row to grasp the idea, and only then mix them.

How to apply it

1. **In maths,** once you have learned several topics, do sets of mixed exercises from different chapters.
2. **In a foreign language,** mix verb tenses in exercises instead of learning them one by one.
3. **In sport or music,** vary your strokes or pieces instead of repeating the same thing non-stop.
4. **Do not worry if you feel slower.** This difficulty is part of learning.

Sources

Rohrer, D. & Taylor, K. (2007). The shuffling of mathematics problems improves learning. *Instructional Science*, 35(6), 481–498. WorldCat

Kornell, N. & Bjork, R. A. (2008). Learning concepts and categories: Is spacing the "enemy of induction"? *Psychological Science*, 19(6), 585–592. PubMed

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